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ABSTRACT

This sourcebook contains nine papers on various aspects of collaborative learning for students with emphasis on college level instruction (though some material relevant to secondary elementary education is also included). Contributors address what collaborative learning is, how is it implemented, how to assess it, and where it is used. Each section of the sourcebook contains an annotated bibliography, as well as a general bibliography containing the references cited in the articles reprinted in that section. Articles and their authors are as follows: "What Is Collaborative Learning?" (Barbara Leigh Smith, Jean T. MacGregor); "Collaborative Learning and the 'Conversation of Mankind'" (Kenneth A. Bruffee); "Collaborative Learning and Positive Change in Higher Education" (Karl A. Smith, David W. Johnson, Roger T. Johnson); "Collaborative Learning: Reframing the Classroom" (Jean T. MacGregor); "Teachers and Learning Groups: Dissolution of the Atlas Complex" (Donald L. Finkel, G. Stephen Monk); "Why Some Groups Fail: A Survey of Students' Experiences with Learning Groups" (Susan Brown Fiechtner, Elaine Actis Davis); "Student Involvement in Learning: Cooperative Learning and College Instruction" (Jim Cooper, Randal Mueck); "Collaborative Learning in the Classroom: A Guide to Evaluation" (Harvey S. Wiener); and "Research on Cooperative Learning: Consensus and Controversy" (Robert E. Slavin). The final section provides: (1) a listing of 50 colleges and universities implementing collaborative learning (with a program description and contact information); and (2) a listing of 5 collaborative learning networks (with descriptions and contact information). (GLR)

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COLLABORATIVE LEARNING: A SOURCEBOOK FOR HIGHER EDUCATION

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First we wish to acknowledge the contributions of the individuals and institutions listed in section D, "Where is Collaborative Learning Being Used?" We are grateful for their willingness to be listed as contacts and resources. More importantly, we are glad that they have tried collaborative learning strategies, found them to be rewarding, and persisted with their use.

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Anne S. Goodsell
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Barbara Leigh Smith
Jean MacGregor

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INTRODUCTION

Broadly defined, collaborative learning reforms classroom learning by changing students from passive recipients of information given by an expert teacher to active agents in the construction of knowledge. This type of learning takes many forms and is called many names including cooperative and collaborative learning. Although cooperative and collaborative learning derive from different traditions, they both provide structured group activities for students and promote the social skills students need to work together. They differ according to the amount of structure provided for students and the degree of constructed knowledge presented.

Many other terms appear in literature about collaborative learning such as: Federated Learning Communities (FLCs), Freshman Interest Groups (FIGs), learning communities, collaborative learning groups, linked courses, interdisciplinary seminars, joint student-faculty research efforts. What all these names have in common is their focus on active learning and cooperation between students and teachers. A concept as broad as collaborative learning can be packaged and labeled in myriad ways, but the fundamental principle is engagement in and ownership of learning.

The principle--active engagement in learning--founds the current increase in the visibility of collaborative and cooperative learning strategies. Monographs have been published in the past year which advocate the use of collaborative learning and describe the benefits for students and faculty. A new network for cooperative learning has been formed, and existing organizations like the Washington Center for the Improvement of Undergraduate Education are experiencing increasing demands for their services.

In an environment where institutions of higher education are being challenged to improve their rates of retention and quality of student learning, colleges and universities increasingly are turning to collaborative learning strategies as an answer to those problems. And with good reason. Evidence abounds to suggest that collaborative and cooperative learning strategies can and do address problems of student passivity; that professors do gain insight about student learning; that students can gain in thinking skills, communications skills, and mastery of content; and that students become more attached to the institution and as a result are more likely to persist.

The intent of this sourcebook is to provide those interested in facilitating student learning with a place to start learning about collaborative learning. It provides answers to questions such as: What is collaborative learning in higher education? What are its underlying philosophical principles? What are some different types of collaborative learning? How is it implemented? How will it change my role as a teacher? How can we assess the effects of collaborative learning? Most importantly, this book answers the question--where can I go to learn more? It is a place to begin on the road to implementing collaborative learning at your institution in the place and manner that is appropriate for you and your students.

In keeping with the objective of answering questions about collaborative learning, each section of the book focuses on a particular set of information. Section A addresses the question, what is collaborative learning in higher education? The lead essay by Barbara Leigh Smith and Jean MacGregor provides an overview that highlights some of the various forms collaborative learning and some theoretical background upon which the rest of the book is based. Their essay is followed by selected readings which provide material useful for gaining a general understanding of the topic. In a similar manner, section B examines how collaborative learning has been implemented. Reprinted articles, an annotated bibliography, and a bibliography grouped according to different academic disciplines provide the reader with an abundance of practical applications of collaborative learning.

Section C addresses the assessment of collaborative learning. Selected readings focus on ways to assess collaborative learning, as well ways to evaluate the effects of collaborative learning on student achievement, student attitudes, and faculty roles. Section D contains descriptions of college and university programs that use collaborative learning, along with the names of people at each program who can be contacted for additional information about program specifics. At the end of the section are names of organizations and networks which have been involved with the promotion and development of collaborative learning for many years. They are excellent resources for you to use as you experiment with collaborative learning.

Finally, each section of the book contains an annotated bibliography to assist you in choosing the literature or materials which will best meet your needs. Each section ends with a general bibliography containing the references from the reprinted articles in that section and other references pertinent to the topic. It should be noted that there is a large body of information written on collaborative and cooperative learning, most of which refers to work done in elementary and secondary schools. Although a few references to elementary and secondary education are included in this sourcebook (and are noted as such), the focus of this book is on higher education.

SECTION A

COLLABORATIVE LEARNING: DESCRIPTIONS, DEFINITIONS, AND SOME HISTORY

The intent of this section is to give you an idea of what collaborative/cooperative learning looks and feels like. It serves, in this way, as a foundation for later sections on the effects of collaborative learning and its implementation. The lead article by Barbara Leigh Smith and Jean MacGregor "What is Collaborative Learning?" describes characteristics of and approaches to collaborative learning. It is an original article written for the purpose of introducing you to the field. In addition, two other articles provide a foundation for understanding the theoretical and practical justifications for using collaborative/cooperative learning techniques.

The author of the second article, Kenneth Bruffee, has long been an influential person in the area of using collaborative learning in English and writing courses. The article, "Collaborative Learning and the 'Conversation of Mankind,'" is cited widely as a seminal contribution to the field. It weaves the themes of conversation, the nature of thought and knowledge, and the construction of new knowledge into a convincing argument for the use of collaborative learning.

The third article, "Cooperative Learning and Change in Higher Education" by Karl Smith, David Johnson, and Roger Johnson not only describes key concepts in structuring cooperative learning in classrooms, but it also places cooperative learning within a shifting paradigm in higher education. And the final article by Jean MacGregor suggests ways both teachers and students must shift out of their traditional roles and into roles more conducive to collaborative learning.

In keeping with the fact that the term "collaborative learning" encompasses a broad spectrum of techniques, the bibliographies (annotated and general) in this section include articles and books that deal with many different types of collaborative learning. Works on learning groups, cooperative learning, and learning communities are included, as well as a few references to cooperative learning in elementary and secondary education.

NOTE: All citations in these articles appear at the end of section A in the General Bibliography.

Ed.'s note: As an "umbrella term" collaborative learning describes the many educational approaches involving "joint intellectual effort." Smith and MacGregor follow suit with cogent, carefully referenced descriptions of six major collaborative learning approaches along with their various sub-types. They tie each back to a series of assumptions about learning which crosses the varied approaches. The piece is remarkable in its expansiveness. It "maps" the collaborative learning territory and thereby makes orienting oneself to the rest of the sourcebook a much more manageable task.

What is Collaborative Learning?

Barbara Leigh Smith and Jean T. MacGregor

Collaboration. Collaborative learning. Community. Communities of learners. Notions of collaboration and community have been informally linked to the learning process for many years, but they have become catch phrases in education in the 1980's and the 1990's. Collaborative learning is now finding prominence in college viewbooks, at conferences, and in journals on higher education. Although its various approaches are known by different names, collaborative learning is occurring in every discipline at every level of education. While these strategies are often called "innovative" and "new," they have engaged students and teachers throughout much of this century. We are simply developing new forms and adapting them to new contexts.

Collaborative learning is particularly timely now. In the 1980's an avalanche of reports underscored the problems of undergraduate education: the distance between faculty and students, the fragmentation of the curriculum, a prevailing pedagogy of lecture and routinized tests, an educational culture that reinforces student passivity, high rates of student attrition, and a reward system that gives low priority to teaching. In many ways, the academy mirrors larger social trends of fragmentation, lack of civic involvement, and undercurrents of alienation. Collaborative learning, with its emphasis on social and intellectual engagement and mutual responsibility, aims to counteract many of these educational and societal trends.

Collaborative learning holds enormous promise for improving student learning and revitalizing college teaching. It is a flexible and adaptable approach appropriate to any discipline. Nonetheless, teachers who adopt collaborative learning approaches find it challenging. They inevitably face fundamental questions about the purposes of their classes, teacher and student roles and responsibilities, the relationship between educational form and content, and the nature of knowledge itself. Collaborative learning represents a radical departure from contemporary practices in postsecondary education.

In this article, we describe collaborative learning and identify some of its underlying assumptions and goals. We describe some the collaborative learning approaches most widely used in higher education, and we conclude with some observations on the challenges and opportunities that teachers encounter as they work to build collaboration and community into their classrooms.

Characterizing Collaborative Learning

"Collaborative learning" is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together. In most collaborative learning situations students are working in groups of two or more, mutually searching for understanding, solutions, or meanings, or creating a product. There is wide variability in collaborative learning activities, but most center on the students' exploration or application of the course material, not simply the teacher's presentation or explication of it. Everyone in the class is participating, working as partners or in small groups. Questions, problems, or the challenge to create something drive the group activity. Learning unfolds in the most public of ways.

However practiced, collaborative learning represents a significant shift away from the typical teacher-centered or lecture-centered milieu in college. In collaborative classrooms, the lecturing/listening/note-taking process may not disappear entirely, but it lives alongside other processes that are based in students' discussion and active work with the course material. Teachers who use collaborative learning approaches tend to think of themselves less as expert transmitters of knowledge to students and more as expert designers of intellectual experiences for students--as coaches or mid-wives of a more emergent learning process (Belenky, Clinchy, Goldberger, & Tarule, 1985; Schön, 1983, 1987; Whipple, 1987).

Assumptions about Learning

Though collaborative learning takes on a variety of forms and is practiced by teachers of different disciplinary backgrounds and teaching traditions, the field is tied together by a number of important assumptions about learners and the learning process.

Learning is an active, constructive process. To learn new information, ideas, or skills, students have to work actively with them in purposeful ways. They need to attach this new material to, or integrate it with, what they already know--or use it to reorganize what they thought they knew. In collaborative learning situations, students are not simply taking in new information or ideas. They are creating something new with the information and ideas. These acts of intellectual processing--of constructing meaning or creating something new--are crucial to learning.

Learning depends on rich contexts. Recent research suggests that learning is fundamentally influenced by the context and activity in which it is embedded (Brown, Collins, & Duguid, 1989). Collaborative learning activities immerse students in challenging tasks or questions. Rather than beginning with facts and ideas and then moving to an application, collaborative learning activities frequently begin with problems, for which students must marshal pertinent facts and ideas. Instead of being distant observers of questions and answers, or problems and solutions, students become immediate practitioners. Rich contexts challenge students to practice and develop higher order reasoning and problem-solving skills. They invite students to join what Bruffee calls the conversation of the discipline with knowledgeable peers (Bruffee, 1984. See page XXX of this sourcebook).

Learners are diverse. Students bring multiple perspectives to the classroom--diverse backgrounds, learning styles, experiences, and aspirations; teachers can no longer assume a one-size-fits-all approach. When students work together on their learning in class, teachers get a direct and immediate sense of how students are learning, and what experiences and ideas they bring to their learning. The diverse perspectives that emerge in collaborative activities are clarifying not just for teachers; they are illuminating for students as well.

Learning is inherently social. As Jeff Golub points out, "Collaborative learning has as its main feature a structure that allows for student talk: students are supposed to talk with each other....and it is in this talking that much of the learning occurs." (Golub, 1988).

In collaborative learning, there is the intellectual synergy of many minds coming to bear on a problem, and the social stimulation of mutual engagement in a common endeavor. This mutual exploration, meaning-making, and feedback often leads to better understanding on the part of students, and to the creation of new understandings as well.

Learning has affective and subjective dimensions. Collaborative tasks build connections between learners and ideas and between students and teachers. Listening to and acknowledging diverse perspectives, working in a cooperative spirit, becoming a peer teacher or a peer learner--all these activities are socially involving, as well as emotionally demanding. Such intense social interaction stimulates learners and learning. In collaborative learning situations, students generally experience a shift in their intellectual development as they learn to articulate their own point of view and listen to the views of others. They begin to see themselves not just as recipients of truths from textbooks or faculty members, or procedural knowers (going through the motions called for by the teacher), but as responsible creators of their own knowledge and meanings--a change that is essential to life-long learning and true intellectual development.

Goals for Education

While faculty members use collaborative learning because they believe it helps students learn more effectively, many of them also place a high premium on teaching strategies that go beyond mere mastery of content and ideas; they believe that collaborative learning promotes a larger educational agenda. Still, there isn't just one rationale for collaborative learning, but rather several intertwined rationales.

Involvement. Today's college students are increasingly diverse in terms of background, prior experience, skills, and goals; they are commuter students with busy lives, full of distractions and multiple responsibilities. It should not surprise us that many of these students have little sense of connection to each other or the academic community as a whole. Calls to involve students more actively in their learning are coming from virtually every quarter of higher education (Astin, 1985; Bonwell & Eison, 1991; Kuh et al., 1991; Study Group on the Conditions of Excellence in Higher Education, 1984). These exhortations are repeatedly borne out by studies both of students who leave college and those who stay, and by studies on what students find most important and meaningful to their learning (Light, 1990, 1991; Tinto, 1987). Involvement in learning, involvement with other students, and involvement with faculty are factors that make an overwhelming difference in student retention and success in college. By its very nature, collaborative learning is socially and intellectually involving. It invites students to build closer connections to other students, to their faculty, to their courses, and to their learning.

Cooperation and team-work. In collaborative endeavors, students inevitably encounter difference and must grapple with recognizing and working with it. Building the capacities for tolerating or resolving differences, for building agreement that honors all the voices in a group, for caring how others are doing--these abilities are crucial aspects of living in a community. Too often the development of these values and skills are relegated to what is called the "Student Life" side of the campus. Cultivation of team-work and leadership skills are legitimate and valuable classroom goals, not just extra-curricular ones.

As Alexander Astin points out in "Competition or Cooperation: Teaching Teamwork as a Basic Skill" (1987), there is both an implicit and an explicit curriculum embedded in the content and pedagogy of any course. Often, the implicit values are unexamined. Many educational reform efforts are unsuccessful because they fail to deal with the implicit values in the educational environment. Astin believes there is an underlying culture of individualism and competition that gets in the way of many current reform efforts. Collaborative learning represents a new and different value system, one that regards teamwork, cooperation, and community as just as important as academic achievement.

Civic responsibility. These collaborative skills and values are essential components in a larger civic landscape. If democracy is to sustain in any meaningful way, our educational system must foster habits of participation and a sense of responsibility to the larger community. Collaborative learning encourages students to acquire an active voice in shaping their ideas and values and a sensitive ear in hearing others. Dialogue, deliberation, and consensus-building out of differences are strong threads in the fabric of collaborative learning, and in civic life as well.

Collaborative Learning Approaches

Collaborative learning covers a broad territory of approaches, and there is wide variability in the amount of in-class or out-of-class time built around group work. Collaborative activities can range from classroom discussions interspersed with short lectures, through entire class periods, to study on research teams that last a whole term or a year. There is also enormous variability in the goals and processes of collaborative activities. Some faculty members design small group work around specific sequential steps, or tightly structured tasks. Others are comfortable with a more spontaneous agenda developing out of student interests or questions. In some collaborative learning settings, the task for students is to create a clearly delineated product; in others, the task is not to produce a product, but rather to participate in a process, an exercise of responding to each other's work or engaging in analysis and meaning making.

In the next section, we describe a number of widely used collaborative learning approaches. Some of these approaches, such as Guided Design and peer writing, evolved in a particular discipline and then spread to others. Others, such as seminars, peer teaching, and cooperative learning, have been used in many disciplines. Learning communities are a structural approach to curriculum reform that embraces multiple courses or disciplines.

While the approaches we describe are referred to by their distinctive names, there are myriad other small group teaching approaches that also constitute collaborative learning that we will not describe in detail. For example, many faculty punctuate their lectures with questions to student pairs or threesomes. (Johnson, Johnson, & Smith, 1991a). Others create "worksheet workshops" like those Finkel and Monk describe in a later article in this sourcebook (pp. XXX). In numerous lab and field courses, student pairs or student teams gather data together and produce reports. In every discipline, teachers are inventing more extended collaborative projects through presentations or debates, dramatizations and research papers. The possibilities are endless.

Cooperative Learning

Cooperative learning represents the most carefully structured end of the collaborative learning continuum. Defined as "the instructional use of small groups so that students work together to maximize their own and each other's learning," (Johnson, Johnson, & Holubec, 1990) cooperative learning is based on the social interdependence theories of Kurt Lewin and Morton Deutsch (Deutsch, 1949; Lewin,1935). These theories and associated research explore how the **structure** of social interdependence influences individual interaction within a given situation which, in turn, affects the outcomes of that interaction (Johnson & Johnson, 1989). Pioneers in cooperative learning, David and Roger Johnson at the University of Minnesota, Robert Slavin at Johns Hopkins University, and Elizabeth Cohen at Stanford University, have devoted years of detailed research and analysis to clarify the conditions under which cooperative, competitive, or individualized goal structures affect or increase student achievement, psychological adjustment, self-esteem, and social skills.

Cooperative learning structures small group learning around precisely defined tasks or problems. Although numbers of cooperative learning strategies are workable in any discipline, there are several essential elements. Positive interdependence of effort is crucial. Cooperative learning activities are designed so that every learner contributes to the collaborative task. There is "promotive interaction"; students work constructively, talking face-to-face, helping each other complete the given task. At the same time, however, careful attention is given to individual accountability and personal responsibility to achieve the group's goals. Within the framework of group work, each student's performance is still individually assessed and each student is held responsible for contributing to the group's success.

In cooperative learning, the development of interpersonal skills is as important as the learning itself. The development of social skills in group work--learning to cooperate--is key to high quality group work, and many cooperative learning tasks are put to students with both academic objectives and social skills objectives. Many of the strategies involve the assigning of roles within each small group (such as recorder, participation encourager, summarizer) to ensure the positive interdependence of the group participants and to enable students to practice different team-work skills. Built into cooperative learning work is regular group processing, a "debriefing" time where students reflect on how they are doing in order to learn how to become more effective in group learning settings (Johnson, Johnson, & Holubec, 1990).

For years, researchers in the cooperative learning field have focused their work on comparing cooperative learning contexts with competitive and individualized ones. As the Johnsons' summary and analysis of hundreds of studies concludes, cooperative learning situations foster more intrinsic motivation, more continuing interest and commitment to achievement, greater persistence, and the incentive for everyone to succeed together. On the other hand, the motivational environment associated with competitive or individualized learning situations fosters more extrinsic motivation, less continuing interest in achievement, and lower persistence on tasks. Moreover, competition seems to motivate only "winners," students with high ability to achieve in competitive situations (Johnson & Johnson, 1989). Current cooperative learning research is now turning to the internal dynamics of cooperative learning groups, to understand more about the qualities of an effective learning group. Research findings in higher education, though less well explored, appear in more detail in Cooper and Mueck's (pp. XXX) and Slavin's (pp. XXX) articles which follow in this sourcebook.

Under the leadership of the Johnsons at the Cooperative Learning Center at the University of Minnesota, and David DeVries, Keith Edwards, and Robert Slavin at the Study for Social Organization of Schools at Johns Hopkins, cooperative learning has developed in the past 25 years into a forceful movement in K-12 education. Growing numbers of practitioners in higher education are adopting cooperative learning methods. The International Association for the Study of Cooperation in Education (IASCE) publishes the magazine Cooperative Learning and holds triennial conferences. More recently, with support from the Fund for the Improvement of Postsecondary Education, Jim Cooper and his colleagues at California State University Dominquez Hills established a Center for Cooperative Learning in Higher Education which disseminates and researches cooperative learning at the college level and publishes Cooperative Learning in College Teaching.

Problem-Centered Instruction

Problem-centered instruction, widely used in professional education, frequently is built around collaborative learning strategies. Many of these spring from common roots, especially the work of John Dewey in the early part of this century. Dewey endorsed discussion-based teaching and believed strongly in the importance of giving students direct experiential encounters with real-world problems. Guided Design, cases, and simulations are all forms of problem-centered instruction which immerse students in complex problems that they must analyze and work through together. These approaches develop problem solving abilities, understanding of complex relationships, and decision-making in the face of uncertainty. While problem-solving has long been a focus of professional education, it is increasingly regarded as an important aspect of the liberal arts as well. Our focus here is on problem-centered instruction that involves collaborative learning.

Guided Design. Guided Design is the most carefully structured approach to problem-centered instruction. The approach asks students working in small groups to practice decision making in sequenced tasks, with detailed feedback at every step. Developed in the late 1960's in the engineering program at West Virginia University, the Guided Design approach has since been adopted in many disciplines and professional programs, most notably in engineering, nursing, and pharmacy, but in many liberal arts and sciences courses as well (Borchardt, 1984; Day, Macy, & Jackson, 1984; deTornyay & Thompson, 1987; Miller, 1981; Roemer, 1981; Vogt, Cameron, & Dolan, in press). Each Guided Design activity presents a large and open-ended problem to students, but the problem is broken down into the following steps: (1) situation or problem definition, (2) statement of the goal, (3) generation of possible solutions, (4) evaluation of solutions, and (5) development of a plan of action. Each of these steps themselves involve open-ended questions. To answer them, students must marshal both information and the thinking skills of analysis, synthesis, and evaluation.

They also must build their social skills to work in a team, reconcile differences, and reach a common decision. After developing their response to each step of the "design," each student team receives written feedback from the faculty member, the "professional," about the strengths, weaknesses and implications of their decision. At each step of the process, there is an interplay between novice problem-solver and expert problem-solver. (Wales, Nardi, & Stager, 1987) Some designs take about a week to complete, while others run over several weeks of a course.

Careful guidance underpins this approach; it develops from the sequenced steps, from related homework assignments, from the thinking of other students, and from detailed feedback from the faculty member at each step in the process (Wales et al., 1978). Charles Wales at West Virginia University, Director of the Center for Guided Design, and Robert Stager at the University of Windsor co-developed this approach. Guided Design practitioners share their work under the auspices of the International Society for Exploring Teaching Alternatives (ISETA), an organization that promotes a variety of alternative teaching approaches.

Cases. Case studies have long been a staple for teaching and learning in the professions, particularly in the fields of business, law, and education, and they are now being used in many other disciplines as well. A case is a story or a narrative of a real life situation that sets up a problem or unresolved tension which the students analyze and resolve. The use of cases does not necessarily imply collaborative learning or small seminar discussion. However, case method teaching frequently asks small groups of students to tackle cases in class or in study group sessions.

Harvard University's Business School pioneered the development of the case method in the early part of this century. The dean of Harvard's first business program saw the case method as especially appropriate to educating managers and decision-makers. As one of Harvard's early professors put it, "[Business people must be able] to meet in action the problems arising out of new situations of an ever-changing environment. Education, accordingly, would consist of acquiring facility to act in the presence of new experience. It asks not how a man may be trained to know, but how a man be trained to act" (Dewing, 1931, 23).

More recently, in The Reflective Practitioner: How Professionals Think in Action, Donald Schön examines how professionals solve problems and how they develop a highly valuable type of knowledge through reflection-in-action. He believes that education must be designed to promote this reflective practice by immersing students in the "complexity, uncertainty, instability, uniqueness, and value conflicts which are increasingly perceived as central to the world of professional practice" (Schön, 1983, 14). Cases provide a kind of classroom apprenticeship for professional decision-making.

Cases can describe an actual event or composites of several events. They can be developed from almost any materials--letters, business reports, legal documents, or descriptions of actual historical events. Effective cases are complex and realistic, with a strong sense of plot and character. Case narratives compress time and space but otherwise mirror real life in all its provocative complexity and ambiguity. Cases can be very brief, as short as several paragraphs, or quite lengthy. As Boehrer and Linsky point out, the definition of a case is quite elastic and the form of cases is changing: "today, video and computer technology come into increasing use, separately and together, both to present cases and to engage students in working through them" (Boehrer & Linsky, 1990, 56).

Harvard's professional schools have spent many years refining the case method and developing new ways of supporting it in the classroom through the development of new cases and faculty training seminars. Harvard remains the richest source of published cases on a wide variety of subjects in business, law, education, and public policy (Christensen & Hansen, 1987; McNair & Hersum, 1954). There is now a new renaissance of interest in teaching with cases, especially in schools of education and many professional graduate schools.

Problem-centered instruction in medical education. Problem-centered instruction has also emerged in recent decades in the field of medical education. This work began in England, then spread to Canada and ultimately to the United States. M.L.J. Abercrombie's research in England in the 1950's had a profound impact on collaborative learning in medical education both in England and North America (Abercrombie, 1970, 1961). She made a compelling case for discussion methods of teaching, contending that when people work in teams, they make more valid judgements than when working alone. McMaster University in Canada was one of the early pioneers in problem-centered medical education (Barrows & Tamblyn, 1980), followed by Western Reserve University, the University of New Mexico, and others.

In 1985, the Harvard Medical School adopted a problem-based curriculum entitled "New Pathways" that has garnered national attention. It was so successful in its pilot years that the program was quickly extended to all students. While several medical schools have ambitiously mounted whole curricula and extensive teaching support around problem-based instruction, many other campuses have embarked on more modest efforts, building individual courses around these approaches.

Simulations. Simulations are complex, structured role-playing situations that simulate real experiences. These complex scenarios provide one of the most open-ended forms of collaborative learning and often the most exciting way to get students involved. Most simulations ask students, working individually or in teams, to play the roles of opposing stakeholders in a problematic situation or an unfolding drama. Taking on the values and acting the part of a stakeholder usually gets students emotionally invested in the situation. The key aspect of simulations, though, is that of perspective-taking, both during the simulation exercise, and afterward. Following the simulation, there is usually a lengthy debriefing process, a discussion period where students reflect on the simulation and explore their own actions and those of others. This is where important concepts and lessons emerge.

Simulations

When used in a carefully planned syllabus with a clear purpose, simulations enrich the learning process and provide a tangible underpinning to more theoretical material. A colleague of ours in a social science class asked students to read Machiavelli's The Prince and write an essay about their ideal society. Then, the class session played Starpower, a trading game about the distribution of power and authority in society. After a debriefing of the simulation, the students tackled a second writing assignment in which they were asked to juxtapose Machiavelli's analysis of power against their personal vision and their experience in the simulation.

There are now a large number of simulations or educational games, as they are sometimes called, relating to many disciplinary areas (Abt, 1987; Bratley, 1987). Some are quite extensive, taking from four hours to an entire quarter to complete. And a number of simulations utilize computers.

Simulations can also be easily developed from everyday events, and many teachers find it useful to have groups of students develop their own simulations (Glazier, 1969). Some widely used commercially designed simulations are CLUG: the Community Land Use Game (Feldt, 1978); games designed to model prejudice and inter-group cultural communication and relationships such as Bafa Bafa and Barnga: A Simulation on Cultural Clashes (Intercultural Press, 1989); and simulations designed to study power and societal relationships such as Starpower, SimSoc:Simulated Society, and What's News? A Game Simulation of TV News. (Gamson, 1978, 1984). And for some time business schools have used a variety of simulation games called "operational games."

Writing Groups

Both in theory and practice, the most concentrated effort in undergraduate collaborative learning has focused on the teaching of writing. The writing group approach (known variously as peer response groups, class criticism, or helping circles) has transformed thousands of college writing classes. Through the spread of writing across the curriculum initiatives, writing groups increasingly are appearing in other courses as well. While many proponents of peer writing think of this approach as innovative, writing groups are actually as old as the nation. Anne Ruggles Gere's (1987) fascinating book on the subject describes how writing groups enjoy an extensive history in this country, both within and beyond the academy. Literary societies and writing clubs, developing in early American universities in the late 18th and early 19th centuries, met regularly to debate ideas, and to hear and respond to members' work. Benjamin Franklin and countless aspiring and established writers have met to share and critique their work. By the early part of this century, many educators were leading writing groups in high school and college classrooms and were convinced that these processes improved critical thinking as well as writing skills (Gere, 1987).

Using writing groups as a vehicle for reforming the teaching of college English visibly surfaced in the late 1960's, when American writing teachers learned about writing group approaches in Great Britain. Indeed, three seminal books advocating writing as a social process appeared in 1968 (Macrorie, 1968; Moffett, 1968; Murray, 1968). In the decades since, a large body of literature about theory and practice has helped writing teachers move to more active, student-centered, sharing classrooms.

Writing teachers at both the secondary and undergraduate level have embraced peer writing because it helps students see writing as an emergent and social process. As Peter Elbow puts it, "Meaning is not what you start out with but what you end up with. Control, coherence, and knowing your mind are not what you start out with but what you end up with. Think of writing then not as a way to transmit a message but as a way to grow and cook a message" (Elbow, 1973, 14-15).

Peer writing involves students working in small groups at every stage of the writing process. Many writing groups begin as composing groups: they formulate ideas, clarify their positions, test an argument or focus a thesis statement before committing it to paper. This shared composing challenges students to think through their ideas out loud, to hear what they "sound like," so they will know "what to say" in writing.

Writing groups also serve as peer response groups. Students exchange their written drafts of papers and get feedback on them either orally or in writing. This is a challenging process, one that requires students to read and listen to fellow students' writing with insight, and to make useful suggestions for improvement. Word processors have helped peer writing enormously: In many writing labs, students share their drafts and revise them right on the screens.

Getting and giving feedback helps students understand that writing is a social process, not a solo performance. The mutual support of peer writing groups attempts to make the processes of composing and drafting less lonely and alienating (Spear, 1988). Sharing their writing with peers not only gives student writers an audience, it helps them understand the idea of audience (Maimon, 1979). John Bean puts it this way: "Good writing grows out of good talking." And, "Good talking means focused dialectical conversation where students can practice creating and testing their own arguments on an audience of peers" (Bean, 1991, 1990).

Peer writing also makes better writers. A major research study from the University of Chicago compared results of all the major approaches in teaching composition. It concluded that "having students work independently in small groups on purposefully designed and sequenced tasks produces significantly better results, as measured by the quality of thinking revealed in the writing, than does the lecture method, whole class discussion methods, or open-ended group work" (Hillocks, 1984, as summarized in Bean, 1991, 90).

Peer Teaching

With its roots in our one-room schoolhouse tradition, the process of students teaching their fellow students is probably the oldest form of collaborative learning in American education. In recent decades, however, peer teaching approaches have proliferated in higher education, under many names and structures. Many of these approaches have drawn on the peer teaching methods and studies developed by the Goldschmids at McGill University. Student pairs, called "learning cells," practice structured approaches for completing out-of-class assignments, as well as for teaching and quizzing each other on new material. In studies comparing the learning cells approach to seminars, discussion and independent study, the learning cell students at McGill not only outperformed others, but they preferred learning cells to the other approaches (Goldschmid & Goldschmid, 1976).

In his recent book surveying the literature on peer teaching, Neal Whitman offers a helpful typology of peer teaching approaches (Whitman, 1988). "Near-peers" are peer teachers who are slightly more advanced than the learners. They may be *undergraduate teaching assistants* who successfully complete a class and then return to assist the instructor in teaching it by leading discussion groups or help sessions. Another "near-peer" might be a *tutor,* also a previously successful student who works in one-to-one situations with fellow students in need of help in a specific course. *Counselors* is Whitman's term for near-peers who also work one-on-one with fellow students, but instead of being attached to a specific course, they offer broad help, perhaps on writing, study skills, or academic advising. A second type of peer tutor is the "co-peer," a student at the same level who helps another. Students may work in two-person *partnerships* or in larger *work groups* that share a common task.

Peer teaching designs and programs are prolific and naturally quite variable. The following examples represent three of the most successful and widely adapted peer teaching models.

Supplemental instruction. The supplemental instruction approach is an undergraduate teaching assistant model developed by Deanna Martin at the University of Missouri-Kansas City. It has been adopted at hundreds of colleges in the United States and abroad. This urban campus recognized the need to offer tutoring help to students, but budgetary constraints made one-to-one tutoring too expensive. Their search for an alternative approach led to "Supplemental Instruction." This approach focused not on "at risk students," but rather on "at-risk classes," entry level in health sciences, and later in general arts and sciences classes where more than 30% of the students were either withdrawing or failing. The university invited advanced undergraduates who had done well in those classes to become "SI leaders." These students are paid to attend the class and to convene Supplemental Instruction sessions at least three times a week at hours convenient to students in the class. All the students in the class are welcome to attend the SI sessions.

The course instructor works closely with the SI student leader to assess what students need to master the content of the class and to help the SI leader develop sessions to facilitate learning. Still, the SI leader is presented as a "student of the subject," not an expert of the subject--an approach meant to close the perceived gaps between teacher and student and student and subject matter. Evaluations of Supplemental Instruction at the University of Missouri-Kansas City and elsewhere have shown that if students attend the SI sessions consistently, their grades and their persistence in college are significantly higher, regardless of whether they are strong or weak academically

(Blanc, DeBuhr, & Martin, 1983; "Supplemental Instruction," 1991).

Writing fellows. The writing fellows approach, pioneered by Tori Haring-Smith at Brown University, is a peer teaching approach somewhat parallel to supplemental instruction. The writing fellows are upper division students who are strong writers. After extensive training, these students are each deployed to an undergraduate class (generally in the discipline of their major) where they read and respond to the papers of all the students. Haring-Smith calls this a "bottom-up approach" to sustaining writing across the curriculum initiatives, particularly in large classes where many faculty flag at assigning writing because there simply are too many papers to which they must respond. Over 50 colleges and universities have created writing fellows programs.

Mathematics workshops. A third peer teaching approach that spread rapidly in the late 1980's is the intensive mathematics workshops program developed by Uri Treisman while he was at the University of California at Berkeley. Treisman wanted to address the drawbacks of traditional tutoring models--particularly those geared to minority students in academic difficulty. Finding that study groups made a difference in student success, he created a co-peer teaching approach called the Professional Development Program. The program assumes the culture of an honors program rather than a remedial program. Graduate instructors (usually doctoral candidates) lead math workshops built around small group problem-solving with an explicit emphasis on peer teaching. These workshops supplement the regular lecture and discussion sections of mathematics courses. This intensive small group workshop approach, which emphasizes developing strength rather than remediating weakness, and peer collaboration rather than solo competition, completely reversed the prevailing patterns of failure in calculus classes by Hispanic and African American students at Berkeley (Treisman, 1985). This intensive math workshop approach has since spread widely in the mathematics community in high schools, and in both two- and four-year colleges.

These peer teaching approaches and many others like them depart from many tutoring models that focus on the remediation or rescue of the drowning. Many of these newer models require all students to participate as teachers and learners in turn, or they invite all students to participate voluntarily. The tutors are available to all, and the learning context is one of collaboration and success. These programs lead to better learning and higher motivation both for the tutors and the learners. Also, peer teaching introduces countless undergraduates to the stimulation, challenge, and satisfaction of teaching--an important investment in developing the future professorate.

Discussion Groups and Seminars

The terms *discussion group* and *seminar* refer to a broad array of teaching approaches. In college settings we usually think of discussions as processes, both formal and informal, that encourage student dialogue with teachers and with each other. These are spaces within classes, where "instructors and groups of students consider a topic, issue, or problem and exchange information, experiences, ideas, opinions, reactions, and conclusions with one another" (Ewens, 1989). Seminar has several connotations; historically the seminar has been thought of as a course where advanced students take turns presenting research for discussion and critical feedback from student peers as well as the teacher. Seminar also refers to an extended discussion in which students and teacher examine a specific text or common experience.

While the terms group discussion and seminar are often used interchangeably, it is interesting to note that *discussion* derives from the Latin words meaning breaking apart, while the word *seminar* comes from words having to do with nurseries and seed plots. As the etymologies suggest, both these settings involve the interplay between the dissection of ideas and the cultivation of new ones, analysis and synthesis, the acknowledgment of diverse perspectives, and the creation of community. These are powerful arenas for collaborative learning, spaces in the curriculum where the conversation turns to mutual search for understanding.

All the approaches we have described above involve discussion. However most have distinct protocols, goals, or structures framing the activity. What we are describing here--more open-ended discussion or seminars--puts the onus on the teacher or the students to pose questions and build a conversation in the context of the topic at hand. There is enormous variability, then, in terms of who sets the agenda, who organizes and monitors the discussion, and who evaluates what. Some discussions or seminars may be heavily teacher-directed, others much more student-centered. There are a myriad possibilities for discussions, and many good resources on strategies (Christensen, Garvin, & Sweet, 1991; Eble, 1976; McKeachie, 1986; Neff & Weimer, 1989).

Learning Communities

Collaborative learning practitioners would say that all collaborative learning is about the building of learning communities. However, we are using the term learning community here in a broader and more specific sense, in terms of an intentional reconfiguration of the curriculum. In the past 15 years, a number of colleges have recognized that deep-seated structural factors weaken the quality of undergraduate learning and inhibit the development of community. These schools have attacked this problem directly by developing learning communities, a "purposeful restructuring of the curriculum to link together courses so that students find greater coherence in what they are learning and increased interaction with faculty and fellow students" (Gabelnick, MacGregor, Matthews, & Smith, 1990). As such, learning communities are a delivery system and a facilitating structure for the practice of collaborative learning.

Learning community curriculum structures vary from campus to campus, and can serve many different purposes, but they have two common intentions. They attempt to provide intellectual coherence for students by linking classes together and building relationships between subject matter, or by teaching a skill (e.g., writing or speaking) in the context of a discipline. Second, they aim to build both academic and social community for students by enrolling them together in a large block of course work. While the learning community approach goes back 60 years or more (Meiklejohn, 1932), we have seen a recent proliferation of learning community approaches on all sizes and types of campuses. Learning communities directly confront multiple problems plaguing undergraduate education: the fragmentation of general education classes, the isolation of students (especially on large campuses or commuter schools), the lack of meaningful connection-building between classes, the need for greater intellectual interaction between students and faculty, and the lack of sustained opportunities for faculty development.

Some learning community models are quite modest. In the Freshman Interest Group (FIG) model used at several large universities, cohorts of 25-30 freshman students enroll in three classes that are an appropriate introduction and platform for a major. In addition, the FIG group meets in a discussion group once a week with a peer advisor. The faculty of the three classes teach them in the usual way, but they rapidly discover that the FIG students become the most active students in their class.

Other learning community models are more complex in terms of both pedagogy and curriculum redesign. In many linked classes, or three-course clusters, the faculty members co-plan their syllabi to address common themes or develop common assignments. Still other learning community models are completely team taught and involve a more ambitious reconfiguring of coursework around broad interdisciplinary themes. Not only are these closely integrated models exciting for students, they are revitalizing for faculty. Team teaching creates a unique opportunity for learning from each other's disciplinary perspectives and for creating and sharing teaching approaches.

By altering the curricular structure to provide larger units of study, learning communities frequently provide more time and space for collaborative learning and other more complicated educational approaches. Small group workshops and book seminars are staples of most learning communities. Peer writing groups and team projects associated with labs and field work are also fairly common. Study groups emerge in learning communities, both intentionally and spontaneously. These programs provide a unique social and intellectual glue for students that result in high rates of student retention, increased student achievement, and more complex intellectual development (MacGregor, 1991).

Collaborative Learning: Challenges and Opportunities

In the past decade, collaborative learning approaches quietly have begun to proliferate. Specific strategies are spreading across campuses and through disciplinary and professional networks. And as more faculty members use collaborative learning, the design and analysis of these approaches are becoming more diverse and more sophisticated. Research and evaluation on collaborative learning strategies are sharpening our definitions of student outcomes and giving us a clearer understanding of when collaborative activities do and do not work.

Creating a collaborative classroom is full of challenges and dilemmas. Few of us experienced collaborative work in our own undergraduate settings, and much of our graduate school training reinforced the teacher-centered, lecture-driven model of college teaching. For the individual teacher, stepping "out of the center" and engaging students in group activity is hard work, especially at first. For students and teachers alike, every collaborative activity is new and unpredictable in the way it unfolds. Everyone involved must take some risks.

And designing collaborative learning situations requires a demanding yet important rethinking of one's syllabus, in terms of course content and time allocation. If some (or a great deal) of the classroom time is considered an important social space for developing understandings about course material, or if some of the out-of-class time is devoted to study groups or group projects, how then should the rest of the class time (lectures, assignments, examinations) be designed? How does the teacher ensure that students are learning and mastering key skills and ideas in the course, while at the same time addressing all the material of the course? Teaching in collaborative settings puts the tension between the **process** of student learning and **content** coverage front and center.

As teachers become more involved in using collaborative learning, they discover what radical questions it raises. Collaborative learning goes to the roots of long-held assumptions about teaching and learning. Classroom roles change: Both teachers and students take on more complex roles and responsibilities. (Finkel & Monk, 1983, available in this sourcebook pp. XXX; MacGregor, 1990). The classroom is no longer solo teacher and independent students--it becomes more an interdependent community. This degree of involvement often questions and reshapes assumed power relationships between teachers and students, a process that at first can be confusing and disorienting (Romer & Whipple, 1990). Not only is course content reshaped, so are definitions of student competence. The public nature of group work makes the demonstration of student learning continuous. Thus, for teachers and students, collaborative learning both complicates and enriches the evaluation process.

Challenges to collaborative learning at the classroom level are compounded by the traditional structures and culture of the academy, which continue to perpetuate the teacher-centered, transmission-of-information model of teaching and learning. The political economy of the academy is set up to front load the curriculum with large lower division classes in rooms immutably arranged for lectures, usually in classes limited to fifty-minute "hours." Student-student interaction; extended, careful examination of ideas; the hearing-out of multiple perspectives; the development of an intellectual community--all these are hard to accomplish under these physical and time constraints.

The lecture-centered model is reinforced (both subtly and blatantly) by institutional reward systems that favor limited engagement in teaching and give greater recognition to research. Achievement for teachers and students alike is assumed to be a scarce honor, which one works for alone, in competition with peers. This assumption of scarcity is the platform for norm-referenced grading, or "grading on the curve," a procedure that enforces distance between students and corrodes the trust on which collaborative learning is built. Moreover, our definitions of ourselves as teachers, as keepers and dispensers of disciplinary expertise, are still very much bound up in the lecture podium. As a young colleague of ours just beginning to use collaborative learning in her class acidly observed, "I *know* this works, but my colleagues don't respect it as real teaching. They associate group work with lazy, unprepared faculty members."

And there are compelling reasons to believe our colleagues. Lectures, the prevailing mode of classroom teaching in college, have only limited efficacy (Blackburn, Pellino, Boberg, & O'Connell, 1980; Costin, 1972, 1980; McKeachie, 1986; Penner, 1984; Thielens, 1987; Verner & Dickinson, 1967). The myths about interpersonal competition--that it is motivating, enjoyable, character-building, and necessary for success in a competitive workplace and world--have been debunked increasingly in the past twenty years, both in theoretical terms (Astin, 1987; Bricker, 1989; Nichols, 1989; Palmer, 1983) and through extensive research (Johnson & Johnson, 1989a; Kohn, 1986). Most troubling of all, more than 50% of the students who begin college leave, often never to return. Much of this student leaving has to do with feelings of isolation and a lack of involvement with the college environment (Tinto, 1987). Whether we measure these losses in wasted resources, in thwarted aspirations, or in workplace unpreparedness, the costs of this kind of attrition are too high.

While these reasons may motivate some teachers, what really propels teachers into collaborative classrooms is the desire to motivate students by getting them more actively engaged. Nonetheless, wanting to be a facilitator of collaborative learning and being good at it are very different things. As with all kinds of teaching, designing and guiding group work takes time to learn and practice. Most teachers start with modest efforts while others may work with colleagues, designing, trying, and observing each other's approaches.

Several years ago, two colleagues of ours embarked on collaborative learning because they were dissatisfied with their introductory biology course. Because it seemed students were having difficulty grasping the concepts in the textbook, these teachers found themselves devoting too much class time to re-explaining the text material. At the same time, they noticed how engaged students were with their occasional problem-solving exercises and small group seminars on journal articles.

Over a period of a year, these two biologists began to shift their lectured-centered course to one involving small group problem-solving workshops. They developed these workshops as applications and extensions of the textbook reading and required students to complete reading assignments in order to participate in class workshops. At the same time, these faculty members built support for their new approach with their biology department colleagues by asking for their help in defining the knowledge and understandings essential to completion of Introductory Biology. The rewards were immediate: The completion rate of the course soared, student achievement rose significantly, and the course became much more exciting to teach. These teachers have continued their collaboration, refining the workshops in the course and developing new ones.

The story of our biology colleagues is not anomalous. Faculty collaboration seems to be an important ingredient in the design of and experimentation with collaborative learning approaches. Learning new moves in the classroom need not be a lonely enterprise. Faculty development initiatives at the departmental or college-wide level need to acknowledge this as they work to create a supportive climate for dissemination of approaches as well as a forum for work on questions that arise. At several universities, collaborative and cooperative learning "users groups" have sprung up and become valuable structures for sharing approaches and problems. The team-teaching that is embedded in many learning community programs is a powerful strategy for enabling faculty to build their repertoires and confidence. Research and evaluation, from modest faculty-designed "classroom research" (Cross & Angelo, 1985) to more formal studies, can also help develop approaches and clarify their results. Sourcebooks like this one and growing networks, such as AAHE's Action Community on Collaborative Learning, will also continue to share resources and build momentum.

There is no getting around the challenging nature of collaborative learning. But when collaborative work becomes a regular feature of their class, faculty members usually find it enormously energizing and liberating. The specter of teaching becoming repetitive or routinized simply isn't an issue for these teachers. Every course and every class presents an intriguing opportunity. Teachers relish the intellectual challenges of creating (and re-creating) activities or problems that really engage students. They enjoy those moments when the class becomes a community. And they often speak of the new lens they gain on their students, which comes from watching them struggle with ideas and build meaningful connections to previous learning or personal experiences. They also remark on the fresh perspectives they gain on their subject matter, as it is enriched and challenged by continuous and diverse student examination and re-shaping of it.

Ideally, collaborative learning leads students to become much more directly immersed in the ideas of the class. They will develop confidence and skills at entertaining ideas on their own while learning to raise questions, to listen carefully, and to respond to others' questions. They will develop the ability to stay focused, sustain an idea, build rapport with fellow students and learn the art of disagreeing with others with respect and courtesy. They may learn to recognize and acknowledge the limitations of their own points of view. These intellectual and interpersonal skills don't come easily to college students, not to mention college graduates! Their development requires extended and focused practice. As Finkel and Monk point out in one of the following articles, students' awkwardness and tentativeness can often discourage teachers, and drive them back into the comparative ease of lecturing (Finkel & Monk, 1983). Developing successful collaborative learning activities challenges teachers to become coaches and facilitators of complex social processes, but these are deeply important ones for true learning.

Ultimately, collaborative classrooms stimulate both students and teachers. In the most authentic of ways, the collaborative learning process models what it means to question, learn and understand in concert with others. Learning collaboratively demands responsibility, persistence, and sensitivity, but the result can be a community of learners in which everyone is welcome to join, participate, and grow.

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Ed.'s note: In a very thoughtful, reasoned way Bruffee makes the case for collaborative learning. He traces its history in terms of our current interests in it, defines it, and through that definition justifies it as an instructional method of merit. Although the paper was originally written for an English faculty member audience, the rationale it establishes for collaborative learning crosses disciplinary boundaries and is relevant in most fields. To emphasize that interdisciplinary relevance (and to make the paper a more manageable reading length), we have deleted some of the passages where the further and more specific application to English is made.

This version is true to the author's intent: "This essay is frankly an attempt to encourage other teachers to try collaborative learning and to help them use collaborative learning appropriately and effectively. But it offers no recipes. It is written instead on the assumption that understanding both the history and the complex ideas that underlie collaborative learning can improve its practice and demonstrate its educational value."

Collaborative Learning and the "Conversation of Mankind"

Kenneth A. Bruffee

The History of Current Interest in Collaborative Learning

The history of collaborative learning as I know it can be briefly sketched. Collaborative learning began to interest American college teachers widely only in the 1980's, but the term was coined and the basic idea first developed in the 1950's and 1960's by a group of British secondary school teachers and by a biologist studying British post-graduate education--specifically, medical education. I myself first encountered the term and some of the ideas implicit in it in Edwin Mason's still interesting but now somewhat dated polemic entitled Collaborative Learning (1970), and in Charity James' Young Lives at Stake: A Reappraisal of Secondary Schools (1968). Mason, James, and Leslie Smith, colleagues at Goldsmith's College, University of London, were committed during the Vietnam era to democratizing education and to eliminating from education what were perceived then as socially destructive authoritarian social forms. Collaborative learning as they thought of it emerged from this largely political, topical effort.

The collaborative forms that Mason and his colleagues proposed to establish in education had already been explored and their educational value affirmed, however, by the earlier findings of M.L.J. Abercrombie. Abercrombie's Anatomy of Judgment (1964) culminated ten years of research on the selection and training of medical students at University College, University of London. The result of her research was to suggest that diagnosis, the art of medical judgment and the key element in successful medical practice, is better learned in small groups of students arriving at diagnoses collaboratively than it is learned by students working individually. Abercrombie began her study by observing the scene that lay people think is most typical of medical education: the group of medical students with a teaching physician gathered around a ward bed to diagnose a patient. She then made a seemingly slight but in outcome enormously important change in the way that scene is usually played out. Instead of asking each individual member of the group of students to diagnose the patient on his or her own, Abercrombie asked the whole group to examine the patient together, discuss the case as a group, and arrive at a consensus, a single diagnosis that they could all agree to. What she found was that students learning diagnosis this way acquired good medical judgment faster than individuals working alone (1964, 19).

For American college teachers, the roots of collaborative learning lie neither in radical politics nor in research. They lie in the nearly desperate response of harried colleges during the early 1970's to a pressing educational need. A decade ago, faculty and administrators in institutions throughout the country became aware that, increasingly, students entering college had difficulty doing as well in academic studies as their native ability suggested they should be able to do. Of course, some of these students were poorly prepared academically. Many more of them, however, had on paper excellent secondary preparation. The common denominator among both the poorly prepared and the seemingly well prepared was that, for cultural reasons we may not yet fully understand, all these students seemed to have difficulty adapting to the traditional or "normal" conventions of the college classroom.

One symptom of the difficulty these students had adapting to college life and work was that many refused help when it was offered. The help colleges offered, in the main, were tutoring and counseling programs staffed by graduate students and other professionals. These programs failed because undergraduates refused to use them. Many solutions to this problem were suggested and tried, from mandated programs that forced students to accept help they evidently did not want, to sink-or-swim programs that assumed that students who needed help but didn't seek it out didn't belong in college anyway.

One idea that seemed at the time among the most exotic and unlikely (that is, in the jargon of the 60's, among the most "radical") turned out in the event to work rather well. Taking hints about the social organization of learning given by John Bremer, Michael von Moschzisker, and others writing at that time about changes in primary and secondary education, some college faculty members guessed that students were refusing help because the kind of help provided seemed merely an extension of the work, the expectations, and above all the social structure of traditional classroom learning (1971, 7). It was traditional classroom learning that seemed to have left these students unprepared in the first place. What they needed, it seemed, was help that was not an extension of but an alternative to traditional classroom teaching.

To provide that alternative some colleges turned to peer tutoring. Through peer tutoring, teachers could reach students by organizing them to teach each other. And peer tutoring, it turned out, was just one way of doing that, although perhaps the most readily institutionalized way. Collectively, peer tutoring and similar modes such as peer criticism and classroom group work could be sensibly classified under the convenient term provided by our colleagues in Britain: collaborative learning. What the term meant in practice was a form of indirect teaching in which the teacher sets the problem and organizes students to work it out collaboratively. For example, in one type of collaborative learning, peer criticism (also called peer evaluation), students learn to describe the organizational structure of a peer's paper, paraphrase it, and comment both on what seems well done and what the author might do to improve the work. The teacher then evaluates both the essay and the critical response. In another type of collaborative learning, classroom group work, students in small groups work toward a consensus in response to a task set by the teacher.

What distinguished collaborative learning in each of its several types from traditional classroom practice was that it did not seem to change what people learned (a supposition that now seems questionable) so much as it changed the social context in which they learned it. Students' work tended to improve when they got help from peers; peers offering help, furthermore, learned from the students they helped and from the activity of helping itself. Collaborative learning, it seemed, harnessed the powerful educative force of peer influence that had been--and largely still is--ignored and hence wasted by traditional forms of education.[1]

More recently, those of us actively interested in collaborative learning have begun to think further about this practical experience. Recent developments in philosophy seem to suggest a conceptual rationale for collaborative learning that yields some unexpected insights into pedagogical practice. A new conception of the nature of knowledge provides direction that we lacked earlier as we muddled through, trying to solve practical problems in practical ways. The better we understand this conceptional rationale, it seems, the more effective our practice of collaborative learning becomes.

In the hope that this experience will prove true for others, the following three sections outline the rationale of collaborative learning as I currently understand it and the relation of that rationale to classroom practice. The final section outlines some as yet not fully worked out implications both of collaborative learning as a practice and of some aspects of its conceptual rationale. Practice and rationale together, I will argue there, have the potential to challenge fairly deeply the theory and practice of traditional classroom teaching.

Conversation and the Nature of Thought and Knowledge

In an important essay on the place of literature in education published some twenty years ago, "The Voice of Poetry in the Conversation of Mankind," Michael Oakeshott argues that what distinguishes human beings from other animals is our ability to participate in unending conversation. "As civilized human beings," Oakeshott writes,

> we are the inheritors, neither of an inquiry about ourselves and the world, nor of an accumulating body of information, but of a conversation, begun in the primeval forests and extended and made more articulate in the course of centuries. It is a conversation which goes on both in public and within each of ourselves....Education, properly speaking, is an initiation into the skill and partnership of this conversation in which we learn to recognize the voices, to distinguish the proper occasions of utterance, and in which we acquire the intellectual and moral habits appropriate to conversation. And it is this conversation which, in the end, gives place and character to every human activity and utterance. (1962, 199)

Oakeshott argues that the human conversation takes place within us as well as among us, and that conversation as it takes place within us is what we call reflective thought. In making this argument he assumes that conversation and reflective thought are related in two ways: casually and functionally. That is, Oakeshott assumes what the work of Lev Vygotsky and others has shown, that reflective thought is public or social conversation internalized (see, for example, Vygotsky, *Mind and Society* [Cambridge, Mass.: Harvard University Press, 1978]). We first experience and learn "the skill and partnership of conversation" in the external arena of direct social exchange with other people. Only then do we learn to displace that "skill and partnership" by playing silently ourselves, in imagination, the parts of all the participants in the conversation. As Clifford Geertz has put it,

> thinking as an overt, public act, involving the purposeful manipulation of objective materials, is probably fundamental to human beings; and thinking as a covert, private act, and

> without recourse to such materials [is] a derived, though not unuseful, capability....Human thought is consummately social: social in its origins, social in its functions, social in its form, social in its applications.[2]

Since what we experience as reflective thought is related casually to social conversation (we learn one from the other), the two are also related functionally. That is, because thought is internalized conversation, thought and conversation tend to work largely in the same way. Of course, in thought some of the limitations of conversation are absent. Logistics, for example are no problem at all. I don't have to take the A train or Eastern Airlines flight #221 to get together with myself for a chat. And in thought there are no differences among the participants in preparation, interest, native ability, or spoken vernacular. Each one is just as clever as I can be, or just as dull. On the other hand, in thought some of the less fortunate limitations of conversation may persist. Limitations that may be imposed, for example, by ethnocentrism, inexperience, personal anxiety, economic interests, and paradigmatic inflexibility can constrain my thinking just as they can constrain conversation. If my talk is narrow, superficial, biased and confined to cliches, my thinking is likely to be so too.

The relationship I have been drawing here between conversation and thought illuminates the source of the quality, depth, terms, character, and issues of thought. The assumptions underlying my argument differ considerably, however, from the assumptions we ordinarily make about the nature of thought. We ordinarily assume that thought is some sort of given, an "essential attribute" of the human mind. The view that conversation and thought are causally related assumes not that thought is an essential attribute of the human mind but that it is instead an artifact created by social interaction. We can think because we can talk, and we think in ways we have learned to talk. As Stanley Fish has put it, the thoughts we "can think and the mental operations [we] can perform have their source in some or other interpretive community."[3] The range, complexity, and subtlety of our thought, its power, the practical and conceptual uses we can put it to, and the very issues we can address result in large measure directly from the degree to which we have been initiated into what Oakeshott calls the potential "skill and partnership" of human conversation in its public and social form.

To the extent that thought is internalized conversation, then, any effort to understand how we think requires us to understand the nature of conversation; and any effort to understand conversation requires us to understand the nature of community life that generates and maintains conversation. Furthermore, any effort to understand and cultivate in ourselves the kind of thought we value most requires us to understand and cultivate the kinds of community life that establish and maintain conversation that is the origin of that kind of thought. To think well as individuals we must learn to think well collectively--that is, we must learn to converse well. The first steps to learning to think better, therefore, are learning to converse better and learning to establish and maintain the sorts of social context, the sorts of community life, that foster the sorts of conversation members of the community value.

This principle has broad applicability and has implications far beyond those that may be immediately apparent. For example, Thomas Kuhn has argued in The Structure of Scientific Revolutions (1970) that to understand scientific thought and knowledge we must understand the nature of scientific communities. Scientific knowledge changes not as our "understanding of the world" changes. It changes as scientists organize and reorganize relations among themselves (209-10). Carrying Kuhn's view and terminology further, Richard Rorty argues in Philosophy and the Mirror of Nature(1979) that to understand any kind of knowledge we must understand what he calls the social justification of belief. That is, we must understand how knowledge is established and maintained in the "normal discourse" of communities of knowledgeable peers.[4]

Stanley Fish completes this argument by saying that these "interpretive communities" are the source of our thought and of the "meanings" we produce through the use and manipulation of symbolic structures, chiefly language. Fish (1980) suggests further, reflecting Erving Goffman's conclusion to The Presentation of Self in Everyday Life (1959, 252-53), that interpretative communities may also be in large measure the source of what we regard as our very selves (14). Our feelings and intuitions are as much the product of social relations as our knowledge.

Educational Implications:
Conversation, Collaborative Learning, and "Normal Discourse"

The line of argument I have been pursuing has important implications for educators, and especially for those of us who teach English--both literature and composition. If thought is internalized public and social talk, then writing of all kinds is internalized social talk made public and social again. If thought is internalized conversation, then writing is internalized conversation re-externalized.[5]

Like thought, writing is related to conversation in both time and function. Writing is a technologically displaced form of conversation. When we write, having already internalized the "skill and partnership" of conversation, we displace it once more onto the written page. But because thought is already one step away from conversation, the position of writing relative to conversation is more complex than the position of thought relative to conversation. Writing is at once two steps away from conversation and a return to conversation. We converse; we internalize conversation as thought; and then by writing, we re-immerse conversation in its external, social medium.

My ability to write this essay, for example, depends on my ability to talk through with myself the issues I address here. And my ability to talk through an issue with myself derives largely from my ability to converse directly with other people in an immediate social situation. The point is not that the particular thing I write every time must necessarily be something I have talked over with other people first, although I may well often do just that. What I have to say can, of course, originate in thought, and it often does. But my thought itself is conversation as I have learned to internalize it. The point, therefore, is that writing always has its roots deep in the acquired ability to carry on the social symbolic exchange we call conversation.

The inference writing teachers should make from this line of reasoning is that our task must involve engaging students in conversation among themselves at as many points in both the writing and the reading process as possible, and that we should contrive to ensure that students' conversation about what they read and write is similar in as many ways as possible to the way we would like them eventually to read and write. The way they talk with each other determines the way they will think and the way they will write.

To organize students for these purposes is, in as general a way as I can put it, to organize collaborative learning. Collaborative learning provides a social context in which students can experience and practice the kinds of conversation valued by college teachers. The kind of conversation peer tutors engage in with their tutees, for example, can be emotionally involved, intellectually and substantively focused, and personally disinterested. There could be no better source than this of the sort of displaced conversation--writing--valued by college teachers. Similarly, collaborative classroom group work guided by a carefully designed task makes students aware that writing is a social artifact, like the thought that produces it. Writing may seem to be displaced in time and space from the rest of a writer's community of readers and other writers, but in every instance writing is an act, however much displaced, of conversational exchange.

Besides providing a particular kind of conversation, collaborative learning also provides a particular kind of social context for conversation, a particular kind of community--a community of status equals: peers. Students learn the "skill and partnership" of re-externalized conversation, writing, not only in a community that fosters the kind of conversation college teachers value most, but also in a community that approximates the one most students must eventually write for in everyday life, in business, government, and the professions.

It is worthwhile to digress a moment here to establish this last point. In most cases people write in business, government, and the professions mainly to inform and convince other people within the writer's own community, people whose status and assumptions approximate the writer's own.[6] That is, the sort of writing most people do most in their everyday working lives is what Richard Rorty calls "normal discourse." Normal discourse (a term of Rorty's coinage based on Thomas Kuhn's term "normal science") applies to conversation within a community of knowledgeable peers. A community of knowledgeable peers is a group of people who accept, and whose work is guided by, the same paradigms and the same code of values and assumptions. In normal discourse, as Rorty puts it, everyone agrees on the "set of convention's about what counts as a relevant contribution, what counts as a question, what counts as having a good argument for that answer or a good criticism of it." The product of normal discourse is "the sort of statement that can be agreed to be true by all participants whom the other participants count as 'rational'" (Rorty 1979, 320).

Teaching normal discourse in its written form is central to a college curriculum, therefore, because the one thing college teachers in most fields commonly want students to acquire, and what teachers in most fields consistently reward students for, is the ability to carry on in speech and writing the normal discourse of the field in question. Normal discourse is what William Perry describes as discourse in the established contexts of knowledge in a field, discourse that makes effective reference to facts as defined within those contexts. In a student who can integrate fact and context together in this way, Perry says, "we recognize a colleague."[7] This is so because to be conversant with the normal discourse in a field of study or endeavor is exactly what we mean by being knowledgeable--that is, knowledge-able--in that field. Not to have mastered the normal discourse of a discipline, no matter how many "facts" or data one may know, is not be knowledgeable in that discipline. Mastery of a knowledge community's normal discourse is the basic qualification for acceptance into that community.

This point having, I hope, been established, the nature of the particular kind of community that collaborative learning forms becomes clearer. Collaborative learning provides the kind of social context, the kind of community, in which normal discourse occurs: a community of knowledgeable peers. This is one of its main goals: to provide a context in which students can practice and master the normal discourse exercised in established knowledge communities in the academic world and in business, government, and the professions.

But to say this only raises a host of questions. One question is, how can student peers, who are not members of the knowledge communities they hope to enter, who lack the knowledge that constitutes those communities, help other students enter them? The first, more concrete answer to this question is that no student is wholly ignorant and inexperienced. Every student is already a member of several knowledge communities, from canoeing to computers, baseball to ballet. Membership in any one of these communities may not be a resource that will by itself help much directly in learning to organize an essay or explicate a poem. But pooling the resources that a group of peers brings with them to the task may make accessible the normal discourse of the new community they together hope to enter.

Students are especially likely to be able to master that discourse collaboratively if their conversation is structured indirectly by the task or problem that a member of that new community (the teacher) has judiciously designed.[8] To the conversation between peer tutors and their tutees in writing, for example, the tutee brings knowledge of the subject to be written about and knowledge of the assignment. The tutor brings sensitivity to the needs and feelings of peers and knowledge of the conventions of discourse and of standard written English. And the conversation is structured in part by the demands of the teacher's assignment and in part by the formal conventions of the communities the teacher represents, the conventions of academic discourse and standard English.

Such conversation among students can break down, of course, if any one of these elements is not present. It can proceed again if the person responsible for providing the missing element, usually but not always the teacher, is flexible enough to adjust his or her contribution accordingly. If, for example, tutees do not bring to the conversation knowledge of the subject and the assignment, then the teacher helps peer tutors see that their most important contribution may be to help tutees begin at the very beginning: how to go about making sufficient acquaintance with the subject matter and how to set out to clarify the assignment. If tutors lack sensitivity to language and to the feelings and needs of their peers, tutees must contribute by making those feelings and needs more clearly evident. If the task or assignment that the teacher has given is unclear or too difficult or too simple-minded to engage students effectively, then the teacher has to revise it. Throughout this process the teacher has to try to help students negotiate the rocks and shoals of social relations that may interfere with their getting on with their work together.

What students do when working collaboratively on their writing is not write or edit or, least of all, read proof. What they do is converse. They talk about the subject and about the assignment. They talk through the writer's understanding of the subject. They converse about their own relationship and, in general, about relationships in an academic or intellectual context between students and teachers. Most of all they converse about and as a part of writing. Similarly, what students do when working collaboratively in small groups in order to read a text with understanding--a poem, a story, or another student's paper--is also to converse. They converse in order to reach consensus in answer to questions the teacher has raised about the text. They converse about and as a part of understanding. In short, they learn, by practicing it in this orderly way, the normal discourse of the academic community.

Collaborative Learning and the Authority of Knowledge

The place of conversation in learning, especially in the humanities, is the largest context in which we must see collaborative learning. To say that conversation has a place in learning should not of course seem peculiar to those of us who count ourselves humanists, a category that includes all of us who teach literature and most of us who teach writing. Furthermore, most of us believe that "class discussion" is one of the most effective ways of teaching. The truth, however, is that despite this belief the person who does most of the discussing in most of our discussion classes is the teacher.

This tends to happen because behind our enthusiasm for discussion lies a fundamental distrust of it. The graduate training most of us have enjoyed--or endured--has taught us, in fact, that collaboration and community activity is inappropriate and foreign to work in humanistic disciplines such as English. Humanistic study, we have been led to believe, is a solitary life, and the vitality of the humanities lies in the talents and endeavors of each of us as individuals. What we call discussion is more often than not an adversarial activity pitting individual against individual in an effort to assert what one literary critic has called "will to power over the text," if not over each other. If we look at what we do instead of what we say, we discover that we think of knowledge as something we acquire and wield as individuals relative to each other, not something we generate and maintain in company with and in dependency upon each other.[9]

But even if we agree that teachers should not encourge this adversarial relationship, we are left lwith the question: How can student peers, who are not themselves members of the knowledge communities they hope to enter, help other students to enter those communities? Isn't collaborative learning the blind leading the blind?

It is of course exactly the blind leading the blind if we insist on the Cartesian model of knowledge: that to know is to "see," and that knowledge is information impressed upon the individual mind by some outside source. But if we accept the premise that knowledge is an artifact created by a community of knowledgeable peers constituted by the language of that community, and that learning is a social and not an individual process, then to learn is not to assimilate information and improve our mental eyesight.

To learn is to work collaboratively to establish and maintain knowledge among a community of knowledgeable peers through the process that Richard Rorty calls "socially justifying belief." We socially justify belief when we explain to others why one way of understanding how the world hangs together seems to us preferable to other ways of understanding it. We establish knowledge or justify belief collaboratively by challenging each other's biases and presuppositions; by negotiating collectively toward new paradigms of perception, thought, feeling, and expression; and by joining larger, more experienced communities of knowledgeable peers through assenting to those communities' interests, values, language, and paradigms of perception and thought.

If we accept this concept of knowledge and learning even partially and tentatively, it is possible to see collaborative learning as a model of the way that even the most sophisticated scientific knowledge is established and maintained. Knowledge is the product of human beings in a state of continual negotiation or conversation. Education is not a process of assimilating "the truth" but, as Rorty has put it, a process of learning to "take a hand in what is going on" by joining "the conversation of mankind." Collaborative learning is an arena in which students can negotiate their way into that conversation.

Collaborative Learning and New Knowledge

Seen this way, collaborative learning seems unexceptionable. It is not hard to see it as comfortable, not very surprising, not even very new. In discovering and applying collaborative learning we seem to be, if not exactly reinventing the wheel, certainly rediscovering some of the more obvious implications of that familiar and useful device. Collaborative learning, it seems, is no new thing under the sun. However much we may explore its conceptual ramifications, we must acknowledge the fact that people have always learned from their peers and doggedly persist in doing so whether we professional teachers and educators take a hand in it or not. In Thomas Woolfe's Look Homeward Angel, Eugene Gant records how in grammar school he learned to write (in this case, form the words on a page) from his "comrade," learning from a peer what "all instruction failed" to teach him. In business and industry, furthermore, and in professions such as medicine, law, engineering, and architecture-

-where to work is to learn or fail--collaboration is the norm. All that is new in collaborative learning, it seems, is the systematic application of collaborative principles to that last bastion of hierarchy and individualism, the American college classroom.

This comfortable view, while appropriate, may yet be deceptive. If we follow just a bit further the implications of the rationale for collaborative learning that I have been outlining here, we catch a glimpse of a somewhat startling educational scene. Take, for example, the principle that entering an existing knowledge community involves a process of negotiation. Followed to its logical conclusion, this principle implies that education is not a rite of passage in which students passively become initiated into an institution that is monolithic and unchanging. It implies that the means by which students learn to negotiate this entry, collaborative learning, is not merely a better pedagogy, a better way of initiating new members into existing knowledge communities. And it implies that collaborative learning as a classroom practice models more than how knowledge is established and maintained. The argument pursued here implies, in short, that in the long run collaborative learning models how knowledge is generated, how it changes and grows.

This is because students in collaborative learing consensus groups do not engage only in normal discourse; they also engage in a kind of abnormal discourse. In contrast to normal discourse, abnormal discourse occurs between coherent communities or within communities when consensus no longer exists with regard to rules, assumptions, goals, values, or mores. Abnormal discourse, Rorty says, "is what happens when someone joins in the discourse who is ignorant of" the conventions governing that discourse "or who sets them aside." Whereas normal discourse produces "the sort of statement which can be agreed to be true by all participants whom the other participants count as 'rational,'" "the product of abnormal discourse can be anything from nonsense to intellectual revolution." Unlike the participants in normal discourse who sound "rational" to the others in the community, a person speaking abnormal discourse sounds "either 'kooky' (if he loses his point) or 'revolutionary' (if he gains it)" (1979, 320, 339).

The importance of abnormal discourse to the discussion of collaborative learning is that abnormal discourse serves the function of helping us--immersed as we inevitably are in the everyday normal discourse of our disciplines and professions--to see the provincial nature of normal discourse and of the communities defined by normal discourse. Abnormal discourse sniffs out stale, unproductive knowledge and challenges its authority, that is, the authority of the community which that knowledge constitutes. Its purpose, Rorty says, is to undermine "our reliance upon the knowledge we have gained" through normal discourse. We must occasionally undermine this reliance because normal discourse tends to "block the flow of conversation by presenting [itself] as offering the canonical vocabulary for discussion of a given topic" (1979, 386-87).

Abnormal discourse is therefore necessary to learning. But, ironically, abnormal discourse cannot be directly taught. "There is no discipline that describes" abnormal discourse, Rorty tells us, "any more than there is a discipline devoted to the study of the unpredictable or of 'creativity'" (1979, 320). What we can teach are the tools of normal discourse, that is, both practical rhetoric and rhetorically based modes of literary criticism such as the taxonomy of figures, new-critical analysis, and deconstructive criticism.[10] To leave openings for change, however, we must not teach these tools as universals. We must teach practical rhetoric and critical analysis in such a way that, when necessary, students can turn to abnormal discourse in order to undermine their own and other people's reliance on the canonical conventions and vocabulary of normal discourse. We must teach the use of these tools in such a way that students *can* set them aside, if only momentarily, for the purpose of generating new knowledge, for the purpose, that is, of reconstituting knowledge communities in more satisfactory ways.

Challenging the traditional authority of knowledge in this way, collaborative learning naturally challenges the traditional basis of the authority of those who teach. Traditionally, our authority as teachers has had its source in our nearness to one of several secular versions of the mind of God. We may feel that we derive our authority from our identification with some "touchstone" of value and truth. Thus, for some of us, mathematicians and poets have, generally speaking, greater authority than, say, sociologists or literary critics. Or, we may feel that we derive our authority from intimacy with the greatest minds. Those who have had the good fortune to study with Freud, Faraday, or Faulkner, for example, have greater authority than those who studied with their disciples; or, those who have studied the manuscripts of Joyce's fiction have greater authority than those who merely studied the edited texts. Finally, we may feel that we derive our authority as teachers from being in direct touch with the objective world. Those whose knowledge is confirmed by hands-on laboratory experimentation have greater authority than those whose knowledge is based on a synthesis of secondary sources.

The concept that knowledge is socially justified belief denies that the authority of knowledge lodges in any of these places, so our authority as teachers according to that concept has quite another source as well. Insofar as collaborative learning inducts students into established knowledge communities and teaches them the normal discourse of those communities, we derive our authority as teachers from being certified representatives of the communities of knowledgeable peers that students aspire to join, and that we, as members of our chosen disciplines and also members of the community of the liberally educated public at large, invite and encourage them to join. Teachers are defined in this instance as those members of a knowledge community who accept the responsibility for inducting new members into the community. Without successful teachers the community will die when its current members die, and knowledge as assented to by that community will cease to exist.

Insofar as collaborative learning helps students understand how knowledge is generated through abnormal discourse, however, our authority as teachers derives from another source. It derives from the values of a larger--indeed, the largest possible--community of knowledgeable peers, the community that encompasses all others. The interests of this largest community contradict one of the central interests of local communities such as professional disciplines and fields of study: to maintain established knowledge. The interest of the larger community is to resist this conservative tendency. Its interest is to bridge gaps among knowledge communities and to open them to change.

The continued vitality of the knowledge communities we value--in particular the community of liberally educated people and its sub-communities, the scholarly and professional disciplines--depends on both these needs being met: to maintain established knowledge and to challenge and change it. As representatives and delegates of a local, disciplinary community, and of the larger community as well, teachers are responsible for the continued vitality of both of the knowledge communities we value. Responsible to both sets of values, therefore, we must perform as conservators *and* agents of change, as custodians of prevailing community values *and* as agents of social transition and reacculturation.

Organizing collaborative learning effectively for this purpose requires doing more than throwing students together with their peers with little or no guidance or preparation. To do that is merely to perpetuate, perhaps even aggravate, the many possible negative efforts of peer group influence: conformity, anti-intellectualism, intimidation, and leveling-down of quality. To avoid these pitfalls and to marshal the powerful educational resource of peer group influence requires us to create and maintain a demanding academic environment that makes collaboration--social engagement in intellectual pursuits--a genuine part of students' educational development. And that in turn requires quite new and perhaps more thorough analyses of the elements of our field than we have yet attempted.

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NOTES

1. The educative value of peer group influence is discussed in Theodore M. Newcomb and Everett K. Wilson, eds., College Peer Groups (1966).

2. The Interpretation of Cultures (1971, 76-77, 360). In addition to "The Growth of Culture and the Evolution of Mind," also relevant in the same volume are "The Impact of the Concept of Man" and "Ideology as a Cultural System," parts four and five.

3. Is There a Text in This Class?: The Authority of Interpretive Communities (1980, 14). Fish develops his argument fully in part 2, pp. 303-371. On the distinction between "interiority" or "inwardness" and "internalization," see Stephen Toulmin (1979, 1-16).

4. I have explored some of the larger educational implications of Rorty's argument in "Liberal Education and the Social Justification of Belief," (1982, 95-114).

5. I make a case for this position in "Writing and Reading as Collaborative or Social Acts," in Janice N. Hays, et al, eds., The Writer's Mind: Writing as a Mode of Thinking (1983, 159-169). In the current critical climate the distinction between conversation and speech as sources of writing and thought is important to maintain. Deconstructionist critics such as Paul de Man argue (1983) following Derrida, that writing is not displaced speech but a primary act. This argument defines "writing" in a much broader sense than we are used to, to mean something like "making public" in any manner, including speech. Hence deconstructionist "writing" can be construed as a somewhat static conception of what I am here calling "conversation": a social act. So long as the conversational, hence social, nature of "writing" in the deconstructionist sense remains unrecognized, the aversion of deconstructionist criticism to the primacy of speech as embodying the phenomenological "metaphysics of presence" remains circular. The deconstructionist argument holds that privileging speech "centers" language in persons. But "persons" are fictions. The alternative proposal by

deconstruction, however, that writing is "free play," invites centering once again, since the figure of play personifies language. The deconstructionist critique has thus yet to acknowledge sufficiently that language, and its products such as thought and the self, are social artifacts constituted by "interpretive communities."

6. Some writing in business, government, and the professionals may of course be like the writing students do in school for teachers, that is, for the sake of practice and evaluation. Certainly some writing in everyday working life is done purely as performance to please superiors in the corporate or department hierarchy, tell them what they already know, and demonstrate to them the writer's proficiency *as* a writer. It may be true, therefore, that learning to write to a person who is not a member of one's own status and knowledge community, that is, to a teacher, has some practical everyday value. But the value of writing of this type is hardly proportionate to the amount of time students formally spend on it.

7. "Examsmanship and the Liberal Arts," in Examining in Harvard College: A Collection of Essays by Members of the Harvard Faculty (1963). Quoted from Kenneth A. Bruffee, A Short Course in Writing (1980, 221).

8. For examples and an explanation of this technique, see my A Short Course in Writing, cited above, and "CLTV: Collaborative Learning Television," (1982, 26-40). Also see Clark Bouton and Russell Y. Garth, eds., Learning in Groups (1983).

9. I discuss the individualistic bias of our current interpretation of the humanistic tradition in "The Structure of Knowledge and the Future of Liberal Education," (1981, 181-185).

10. Christopher Norris defines deconstruction somewhat simplistically but usefully for most purposes as "rhetorical questioning" (1982).

Bruffee, K. A. (1984). Collaborative learning and the "conversation of mankind". College English, 46, 635-652.
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Ed.'s note: Well known researchers Smith, Johnson, and Johnson document the rising interest in cooperative learning among college teachers. They summarize two conceptual approaches to teaching us how to use these learning strategies, and they identify more fully the various types of cooperative learning.

Cooperative Learning and Positive Change in Higher Education

Karl A. Smith, David W. Johnson, and Roger T. Johnson

Alexander Astin recently completed a study of students at 159 baccalaureate-granting institutions (1991). He discovered 22 factors that helped to determine the key influences on students' academic achievement, personal development, and satisfaction with college. Astin found that the particular manner in which the general education curriculum is structured makes very little difference for most of the 22 outcomes. But Astin also found that two environmental factors were significantly predictive of positive change: **interaction among students** and **interaction between faculty and students**--both of which affected more general education outcomes than any other environmental variables studied, including the curriculum content factors. Student-student interaction produced significant effects on 18 of the 22 outcomes and student-faculty interaction produced significant effects on 17 outcomes. In short, Astin discovered the importance of community in college.

One way college teachers can help students develop this sense of community is by employing cooperative learning techniques--techniques that encourage students to share knowledge, work in groups, and learn communication skill while they master material. This chapter is about how you can enhance your teaching and can motivate your students to actively create their knowledge rather than passively listen to yours. It is about structuring learning situations cooperatively at the college level so that students work together to achieve shared goals. To help you understand the usefulness of cooperative learning, we will attempt to define it, highlight some workable variations of it, and help you begin to create a cooperative learning environment at your institution.

What the Research Says

In our reviews (Johnson, Johnson, & Smith, 1991a, 1991b) we found that interest in cooperative learning is growing at a remarkable rate. A recent ERIC search of "Cooperative Learning in Higher Education" (prepared for the ERIC Tracks column in The National Teaching & Learning Forum, Rhem, 1991) produced 171 citations. The distribution of these citations between 1983 and 1991 is shown in Table 1. (Note: The low number for 1991 is due to the delay in abstracting and entering references in the database.) Our review of the literature has revealed some positive and encouraging trends: **(INSERT TABLE ONE NEAR HERE)**

1. Interest in cooperative learning in colleges and universities is growing at an incredible rate.
2. Cooperative learning is equally or more effective than lecturing in helping student master conceptual material and in helping them develop cooperative skills.
3. Cooperative learning is being implemented in a wide range of courses and programs including health sciences, law, engineering, math and science, writing, communication, study skills, professional development, and teacher preparation.
4. Instructors are applying cooperative learning in a variety of ways--cooperative lecture, base groups, formal task groups, structured controversy discussion groups, jigsaw groups, and computer enhanced classes.

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Understanding Cooperative Learning

It's no secret that students learn more when they are active participants in the learning process. One way to get students more involved in this process is to ask them to explain what they are learning to each other, to listen to each other's point of view, to give and receive support from classmates, and to help each other dig below the superficial level of understanding of the material they are learning. It is vital for students to have peer support and to be active learners, not only so that more students learn the material, but so that they get to know other students in class and build a sense of community that centers on the academic side of the school. It is equally important that when students graduate, they have developed skills in talking through material with peers, listening with real skill, knowing how to build trust in a working relationship, and providing leadership to group efforts.

There are a variety of ways to approach cooperative learning, all of which fall into one of two separate but interrelated categories: direct and conceptual cooperative learning. The **direct approach** involves training teachers to use a specific cooperative activity, to teach a specific cooperative lesson, to apply a specific cooperative strategy, and to use a curriculum package based on cooperative learning.

The **conceptual approach** involves training teachers to apply an overall conceptual system to build cooperative activities, lessons, and strategies. The conceptual approach is based on a theoretical framework that provides general principles on how to structure cooperative learning activities in a teacher's specific subject area, curricula, students, and setting. Using these principles teachers can analyze their current curricula, students, and instructional goals and design appropriate cooperative lessons. The advantage of conceptual principles is that they can be used in any classroom from preschool to graduate school. (For more information on the conceptual approach see Cohen, 1986; Johnson & Johnson, 1974, 1991; Johnson, Johnson, &

Smith 1991b; and Cuseo, 1992).

Types of Cooperative Learning

There are several types of cooperative learning that suit the needs of almost all class types: **informal learning groups** which are short-term and less structured; **formal cooperative learning groups** which are more structured and stay together until the task is done; and **cooperative base groups** which are long-term groups whose primary role is one of peer support and long-term accountability.

Informal cooperative learning groups can be used in any class size but are especially useful in larger classes to help focus students' attention prior to the lecture, to break up the lecture and provide the students a chance to review and check for understanding, and to summarize the main points at the end of the lecture. Each of these three uses of informal groups can be initiated by asking the students to turn to the person next to them and discuss their responses to given questions.

The longer term **formal cooperative learning groups** are small (2-4 member) groups formed by the professor (often randomly) to do a specific job such as review homework, work through a problem together, review for a test, perform a lab experiment and write a report, or conduct a design project.

Formal cooperative learning groups are groups that must work together to create a final product. For example, in Karl Smith's engineering classes, he gives students a problem to formulate and solve or material to be mastered. Students then work in small cooperative groups to formulate and solve the problem or frame a concept, and they prepare a report of their results (either on paper or on overhead transparency). Later representatives from several groups are selected randomly to present their group's solution, representation, or summary (The random selection allows for individual accountability). The representations or the approaches used by the various groups to solve the problem are compared and discussed by the whole class. Finally, each group is given time for processing its effectiveness.

Another application of formal work groups is the use of structured controversy in environmental issues seminars taught by Karl Smith and Roger Johnson. These seminars focus on content acquisition and on helping students develop collaborative skills (through cooperative group learning), constructive conflict management skills (through structured controversy discussion), and perspective-taking skills (through presentation and discussion of different perspectives on each issue). In a structured controversy students are assigned a position on an issue which they prepare, present, and defend. The goal is to understand the best arguments on all sides of the issue, but the students are stimulated to prepare better arguments when they are confronted with a compelling argument from the other side. (See

Johnson, Johnson & Smith (1986), and Smith (1984) for more information).

Base groups are long term, small (3-5 member) groups with stable membership whose primary responsibility is to provide support, encouragement, and assistance in learning the material and completing the assignments. In Karl Smith's Civil Engineering Systems class, each of the 70 students is assigned to a three-person base group. The base groups meet at the beginning of each class. They pick up their group's manila folder containing their returned assignments, handouts, name tags, quality chart, etc. Base groups spend a few minutes discussing insights and questions from the reading assignment, providing a carbon copy of notes and briefing any member who missed the previous class period, and helping each other get into a good learning mood. Base group members have no formal in-class, homework, or project assignments, except for the group discussion exam which they complete together in preparation for the individual final exam.

Base groups tend to improve attendance and help to make learning more accessible in lecture size classes. The larger the class and the more complex the subject matter, the more important it is to have base groups.

Getting Started

Innovation and enhancement in higher education is contingent on faculty deciding to change the way they work with students and with each other. We suggest establishing or strengthening three key conditions for personal and organizational change (Johnson & Johnson, 1989):

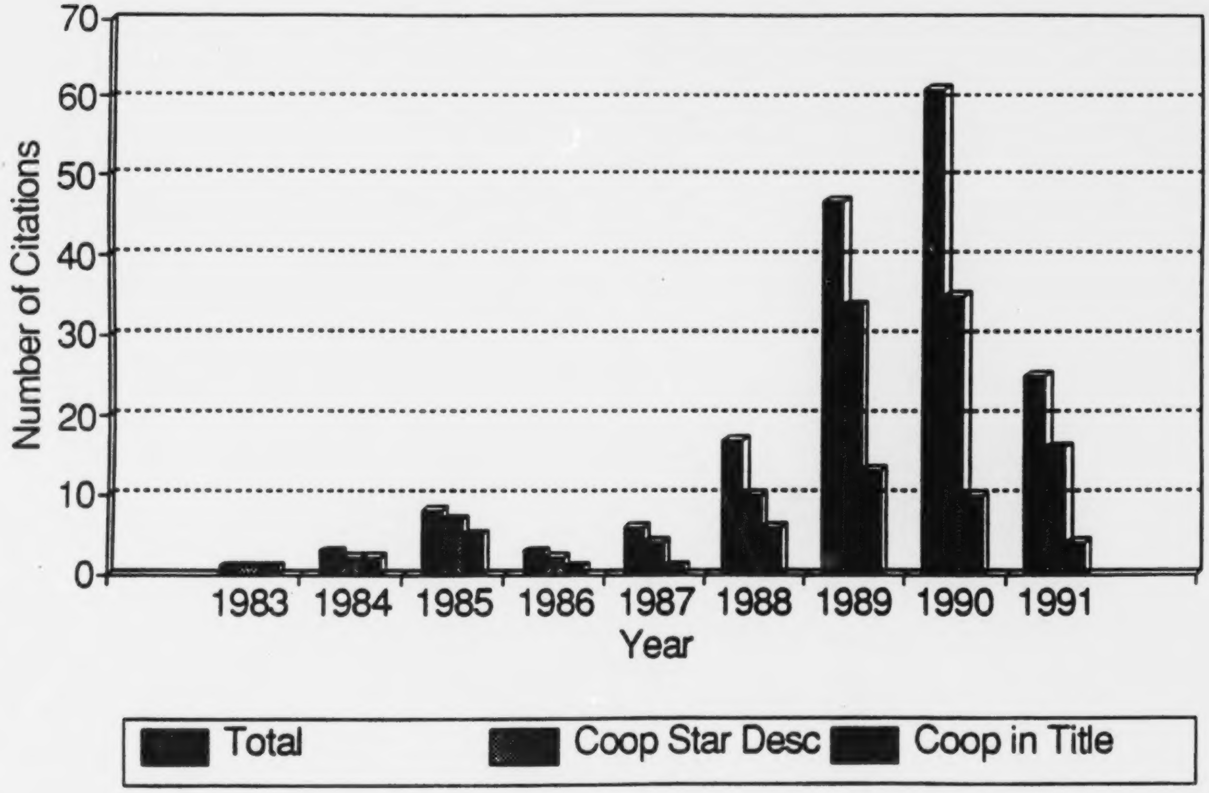
1. Promote an attitude of experimentation. Changing the ways in which faculty help students learn requires an atmosphere that allows for a willingness to try new things and to learn from these new strategies.
2. Synthesize common goals, such as "how well are we doing with our students and faculty?" Meaningful change demands that everyone pull together to achieve a common goal.
3. Create collegial support networks of faculty, students, and administrators. Change is hard and typically does not occur without a group of colleagues who care and provide support and encouragement for one another. The research support for cooperation among faculty is just as strong as that for cooperation among students.

Improve layout

Cooperative learning among students in the classroom and among faculty in departments, colleges, and universities is central to achieving positive and constructive change in higher education.

Table 1

Cooperative Learning Citations
ERIC Database



Ed.'s note: In this article, MacGregor briefly outlines the most recent history of collaborative learning. She goes on to discuss the role revisions that both teachers and students must expect as they shift into a more collaborative forms of education.

Collaborative Learning: Reframing the Classroom

Jean MacGregor

There have always been social dimensions to the learning process, but only in recent decades have specially designed collaborative learning experiences been regarded as an innovative alternative to the lecture-centered and teacher-as-single-authority approaches typical to most college classrooms. With increasing frequency, students are working with each other, and alongside their teachers, to grasp subject matter or deepen their understanding of it. In the process, they are developing their social skills as well as their intellectual ones. Students might be interpreting, questioning, creating, synthesizing, inventing, doubting, comparing, making connections, puzzling, or doing myriad other sorts of active, visible intellectual tasks. But this active learning takes place publicly, in partnership with others. Students and their teachers are involved in a common enterprise, that of *mutual* seeking of understanding. Because many minds are grappling with the material at once while working toward a common goal, collaborative learning has the potential to unleash a unique intellectual and social synergy.

Roots of Collaboration in Education

As the 1990's begin, interest in collaborative learning has never been greater. This expanding work, however, is not based on a single theoretical foundation or even a very clear history of practice. The work on collaboration in education is more like an arbor of vines growing in parallel, crossing, or intertwining. Many of the vines are rooted in experiential learning and student-centered instruction, whose major proponents in this century have been philosopher John Dewey, and cognitive psychologists Jean Piaget and L.S. Vygotsky, each of whom advocated the creation of active learning contexts where students could successively reconstruct their understanding of the world around them.

Closely connected are the vines of cooperative learning, a movement which has proliferated in the K-12 arena under the leadership of David and Roger Johnson and Robert Slavin. Its roots are in social psychology, especially in the small group theories of Kurt Lewin and Morton Deutsch. Different but related vines spring from undergraduate curriculum reform efforts, attempts to re-structure both course work and classroom practice for greater intellectual coherence and active student involvement. Early experiments led by Alexander Meiklejohn at the University of Wisconsin in the 1920's and Joseph Tussman at University of California-Berkeley in the 1960's have numbers of recent new shoots, at The Evergreen State College and in dozens of "learning community" curriculum initiatives around the country. At the same time, problem-centered learning, case methods, and peer feedback approaches have been appearing and expanding in various disciplines and professional degree programs, particularly in writing, mathematics and the sciences, and business and medical schools.

Those who structure their classrooms around collaboration can find philosophical confirmation of their approaches in recent scholarship in social constructionism and in feminist theory and pedagogy. Social constructionism, an expanding web of epistemological perspectives in several disciplines, springs from the assumption that knowledge is *socially*--rather than individually--*constructed* by *communities* of individuals. Knowledge is shaped, over time, by successive conversations, and by ever-changing social and political environments. The knowledge business should not be just the territory of competing scholars or experts, the social constructionists argue; the shaping and testing of ideas is something in which anyone can participate.

Theorists in the moral and intellectual development of women and feminist pedagogy generally agree with the social constructionist view of knowledge creation and change. They believe that students cannot be regarded as a uniform body of isolated individuals poised to receive knowledge through uniform modes of information delivery. Rather, learners are diverse individuals whose understanding of reality is shaped by their gender, race, class, age, and cultural experience. Therefore, teaching is woefully inadequate if it is construed to be an enterprise of "transmission" or "coverage." And learning is woefully limited if it is thought of as simply an exercise in "receiving" and "reflecting." To enable learners to move beyond superficial or merely procedural understanding of a subject, teachers must invite them into a process of working out their own understandings and syntheses of the material and developing their individual points of view toward it. (Belenky, Clinchy, Goldberger & Tarule, 1985)

Social constructionism and feminist pedagogy suggest that classrooms are places where the idea is to create knowledge, not simply transmit it, where a predominant mode of learning involves talking it over and talking it through, not simply listening and thinking it through. This work also implies that teachers can best serve their students by explicitly honoring diversity, emotions, and subjectivity in learning, and by nurturing cooperative and conversational inquiry. These themes comprise the foundation of many collaborative learning approaches (Whipple, 1987).

Designing Collaborative Work

As William Whipple has commented, collaborative learning flourishes in so many contexts that it defies precise definition (Whipple, 1987). During a lecture, students might be asked to turn to a neighbor to formulate responses, draw connections to other material, raise questions, or solve problems. Students might work in teams to conduct and write up a laboratory, field study or longer research project. Or, they might meet regularly to prepare homework, critique each other's writing, hold seminar discussions or prepare a presentation. What is essential to all these activities, though, is **positive interdependence between students, an outcome to which everyone contributes, and a sense of commitment and responsibility to the group's preparation, process, and product.**

For the faculty member, designing collaborative learning experiences requires careful thought about what active (and interactive) learning might entail in the course or discipline. A first task is to examine the scope of a whole course: Where and in how much of the course would student collaboration be appropriate? Second, framing the actual tasks or problems for collaborative work requires thinking through the particular kind of intellectual experiences or thinking tasks that students might undertake together. Most teachers realize that unstructured, free-wheeling explorations do not sufficiently focus student energy, or challenge students to use what they know. Students are most stimulated when challenged with absorbing or puzzling tasks or questions and when they have a clear sense of the expected product. It takes some practice, and repeated observation of students grappling with tasks, for teachers to find those points of access, or "zones of promixal development" as Vygotsky called them, where students are challenged to move from what they know into the realm of what they don't quite know yet.

A third facet in design work concerns feedback and accountability, critical elements in any collaborative enterprise. If multiple small groups are working on problems or exploring issues simultaneously in a classroom, what will the process be for sharing the results of work? When and how might the faculty member provide clarification, evaluation, or extension of the work that has been accomplished? Will the students have an opportunity to evaluate the nature of their own work, as well as their effort as an interdependent group? Individual accountability is critical: How will the teacher carry out individual student evaluation when students are spending significant time working in teams?

The richest guides for teachers are their own experiments with teaching, the advice and experience of colleagues, and most importantly, formal and informal feedback from the students themselves. Indeed, the collaborative classroom, brimming with data about the content and quality of student learning, is an ongoing lab for "classroom research." The public learning taking place provides immediate feedback for the discerning teacher to use in improving collaborative designs. For faculty who offer the same courses year after year, trying group work is a sure hedge against staleness, in that each refinement of a collaborative learning design and each new class's experience with it re-creates the course in fresh and provocative ways.

Reframing the Student Role

While productive, engaged communities of collaborative learners are a worthwhile ideal, teaching and learning in this mode is not without significant demands. Because high expectations about participation and collaboration require substantial role shifts for students, it is not unusual to encounter student resistance to group work. Embedded in student expectations about classroom culture, and the inertia of their own ingrained habits, such resistance should be taken seriously. As they move into collaborative learning settings, students grapple with such shifts as those:

- From listener, observer, and note-taker to active problem-solver, contributor and discussant;
- From low or moderate expectations of preparation for class to high ones;
- From a private presence in the classroom (and few or no risks therein) to a public one, with many risks;
- From attendance dictated by personal choice to that having to do with community expectation;
- From competition with peers to collaborative work with them;
- From responsibilities and self-definition associated with learning independently to those associated with learning inter-dependently;
- From seeing teachers and texts as the sole sources of authority and knowledge, to seeing peers, oneself, and the thinking of the community as additional and important sources of authority and knowledge.

(IMPROVE TABLE LAYOUT)

These shifts are especially problematic for younger college learners. To them, the adjective "cooperative" has unfortunate residual connotations from high school. Relative to authorities, being cooperative has to do with obedience; relative to peers, it means cheating. The idea of cooperation as helping and sharing for positive goals is both unfamiliar and intimidating. Many students have difficulty accepting that collaborative learning with peers is real learning, so acculturated are they to "teacher-is-source-of-knowledge" environments. The faculty member, then, needs to pay attention to setting the context and norms for collaborative work so that students can understand and reflect on both its rationale, value, and immediate goals. With patience and understanding on the part of faculty, students usually break through their cautiousness, fear and skepticism, and discover the stimulation and power of learning in concert with others.

Reframing the Teacher Role

Whether novice or veteran at collaborative learning, faculty members engaged in this work have their own reframing to do with regard to coverage, classroom roles, evaluation and numbers of other issues. Particularly challenging is the process of reconciling one's sense of responsibility about course coverage with one's commitment to enabling students to learn on their own. Too often, faculty members think of course coverage in zero-sum terms, neglecting to ask whether students are **really** comprehending and integrating all that is being "covered." Teachers who build their courses around group work do not belittle or abandon coverage or skills; indeed they and their students are seriously and directly confronting matters of understanding and comprehension all the time. But the burden of "covering," (and explicating and relating), has shifted from resting almost entirely with the teacher to a shared enterprise which involves both teacher and students.

If this shift of responsibility helps to "dissolve the Atlas complex" (Finkel & Monk, 1983. See sourcebook pp. XXX), that is, teachers' feeling endlessly responsible for the class' entire intellectual agenda, it also poses interesting questions. Authority and expertise, power and control--highly intertwined matters for any teacher-- all come up for examination and redefinition in the collaborative classroom. As students together begin assuming more responsibility for their learning, and as classroom time is taken up with more conversational inquiry, the teacher begins to sense subtle but powerful shifts in her role. As students begin to take up their part in the learning enterprise, the teacher begins to see that she is not relinquishing control so much as sharing it in new ways. She discovers that the lines of authority are not so much blurred as they are reshaped.

As teachers work in collaborative settings with students over time, they continuously revisit these tensions of the locus of control and authority, between collaboration and competition, and individual growth and community responsibility. In the process, teachers come to new understandings about the meaning and potential of student-centered learning and about how students learn to think in their disciplines. They relish the ways students emerge as confident, competent learners, who in turn stimulate them to reexamine their own work and thinking.

MacGregor, J. (1990-1991). Collaborative learning: Reframing *the classroom. Teaching Excellence, 2(3) with some material adapted from MacGregor, J. (1990). "Collaborative Learning: Shared Inquiry as a Process of Reform." From M. D. Svinicki (Ed.). The Changing Face of College Teaching. New Directions for Teaching and Learning, No. 42. San Francisco: Jossey-Bass. Reprinted with permission from Teaching Excellence.*

Ed.'s note: The annotated bibliography for section A contains background materials relevant to collaborative learning. The sources address definitional issues and orient those interested to important aspects of the topic. We have tried in the annotations to pinpoint particularly useful and relevant parts of the sources.

SECTION A
Annotated Bibliography

Belenky, M., Clinchy, B., Goldberger, N., & Tarule, J. (1986). Women's ways of knowing. New York: Basic Books.

Chapter 9, Toward an Education for Women, speaks to the need for women to be invested with a sense of their own authority, and for experiential learning experiences. This chapter is most directly applicable to issues of collaborative learning, as it argues for education that incorporates and responds to the personal experiences of women.

Bouton, C., & Garth, R. Y. (Eds.). (1983). Learning in groups. New Directions for Teaching and Learning, No. 14. San Francisco: Jossey-Bass.

A terrific volume of articles about using student learning groups in a variety of disciplines: mathematics, business, writing, medicine, and graduate studies. Gives clear examples of strategies used. A concluding chapter by the editors summarizes similarities in the learning process among different types of learning groups.

Bruffee, K. (1982). Liberal education and the social justification of belief. Liberal Education, 68(2). pp. 95-114.

Explores Richard Rorty's (Philosophy and the Mirror of nature) assertion that knowledge is the "social justification of belief." From this, Bruffee proposes that knowledge communities, where teachers are not the center of authority, may be a way of constructing curricula so that students can examine their own beliefs and engage in the social process of justifying or modifying those beliefs.

Ede, L. (1987, March). The case for collaboration. Paper presented at the Annual Meeting of the Conference on College Composition and Communication, (Atlanta, GA. (ERIC Document Reproduction Service No. ED 282 212)

Responds to Myers' "Reality, consensus, and reform in the rhetoric of composition teaching" (College English, Feb. 1986) by distinguishing between the use of specific collaborative learning techniques and collaborative learning as a holistic educational philosophy. Suggests that a dual perspective is needed so collaborative learning will not become another pedagogical fad.

Gabelnick, F., MacGregor, J., Matthews, R. S., & Smith, B. L. (1990). *Learning communities: Creating connections among students, faculty, and disciplines*. New Directions for Teaching and Learning, No. 41. San Francisco: Jossey-Bass.

Describes learning communities as a special approach to curricular reform. Excellent table on pages 32-37 offers definitions and summarizes various aspects of linked courses, learning clusters, freshman interest groups, federated learning communities, and coordinated studies programs such as the basic unit of instruction, number of students involved, faculty roles, and community-building mechanisms. Chapters on learning community models, issues of implementation and sustainability, teaching in learning communities, and resources on learning communities are among those that present useful information for implementing and reflecting on learning community models.

Gamson, Z. et al. (1984). *Liberating education*. San Francisco: Jossey-Bass.

Offers a vision of a liberating education as one that is diverse, integrative, experiential, and critical. While elaborating on this view, it describes some collaborative learning strategies used at various institutions, particularly the Federated Learning Communities at SUNY, Stony Brook (Chapter 5). Other institutions used as examples have used innovative liberal arts curricula although they may not fall under the rubric of collaborative learning.

Matthews, R. (1986). Learning communities in the community college. *The Community, Technical, and Junior College Journal*, *57*(2), 44-47.

Describes the characteristics of learning communities and their organization in community colleges. And discusses how learning communities can be implemented within the structure of higher education. Gives examples of positive effects of learning communities for students and faculty. An interesting article for those who want to gain an understanding of what learning communities can offer students and faculty and how these communities are implemented.

Millis, B. J. (1990). Helping faculty build learning communities through cooperative groups. In L. Hilssen (Ed.), *To improve*

the academy: Resources for student, faculty, and institutional development, 10 (pp. 43-58). Stillwater, OK: New Forums Press.

A general overview of cooperative learning, including the five key components: positive interdependence, individual accountability, appropriate grouping, group processing, and social skills. Also covers cooperative learning's research base and value, emphasizing its flexibility and positive effects on student achievement, retention, self-esteem, and cross-cultural friendships. The strength of the chapter lies in Millis's description of ten strategies or classroom activities, including jigsaw and think-pair-share.

Tinto, V. (1987). Leaving college: Rethinking the causes and cures of student attrition. Chicago: University of Chicago Press.

Although the primary focus is student attrition, it also addresses the need for students to become involved actively in the intellectual and social life of the institution. Becoming active learners in the classroom is one way for students to make connections between their personal and academic lives and those of others. Ultimately this not only leads to improved retention of students but more importantly to improved learning in college.

Ed.'s note: This, as do the other general bibliographies in the sourcebook, contains citations for materials referred to in the reprinted articles. Additional sources relevant to the collaborative learning are included as well.

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SECTION B
HOW IS COLLABORATIVE LEARNING IMPLEMENTED?

As noted in the introduction and throughout the book, there is no single or right way to use collaborative learning. If placed on a continuum, the methods used might range from an individual professor using collaborative techniques in his or her class to an institutionalized curricular structure where students take a coordinated set of courses which are team taught by a group of professors. Whether you are the lone person on your campus who is trying collaborative learning, or you are at a campus where others are engaged in it, it is possible to implement collaborative learning so that you and your students benefit.

The articles in this section are illustrative of the different practices employed under the general rubric of collaborative learning. The first article, "Teaching and Learning Groups: Dissolution of the Atlas Complex" by Donald Finkel and Stephen Monk, has been cited as one which illustrates the use of learning groups in a classroom from the professor's point of view. It looks at the classroom as a social system whereby a change in the role of the professor necessitates a change in the role of students. Finkel and Monk describe the redistribution of teaching functions, and demonstrate how such changes can shift the responsibility for learning from the professor to students and the professor.

The second article, "Why Some Groups Fail: A Survey of Students' Experiences with Learning Groups" by Susan Brown Fiechtner and Elaine Actis Davis, offers students' descriptions of what it is like to work in groups. Based on these descriptions and other information from a survey they conducted, Fiechtner and Davis develop their own helpful list of "what not to do" in implementing collaborative learning. The third article, "Student Involvement in Learning: Cooperative Learning and College Instruction" by Jim Cooper and Randall Mueck, describes Cooperative Learning as a specialized strategy within collaborative learning. They outline the critical features of Cooperative Learning and offer useful tips for implementing it in individual classrooms. Both articles talk about students working together in groups, but each defines collaborative learning differently, and each concludes with different ways to involve students in the classroom.

The bibliography for this section is in three parts. The first annotated part focuses on how collaborative learning techniques are implemented in a variety of disciplines. Although each article may be geared toward a particular discipline, the information is applicable across disciplines. The second part is organized by academic areas; it includes some annotations. The third part of the bibliography is general (not written for one particular discipline) but not annotated. All citations in these articles appear in the General Bibliography at the end of the section.

Ed.'s note: If you teach with an Atlas complex, you see yourself as primarily responsible for the learning that occurs in your class. Finkel and Monk suggest an alternative; they examine the classroom as a social system and show that if we no longer think of teaching roles but teaching functions, we can distribute the responsibility for learning among students and the teacher. Removing the teacher from the front-and-center role of expert can make possible the kind of collaboration and cooperation advocated throughout this book.

Teachers and Learning Groups: Dissolution of the Atlas Complex

Donald L. Finkel and G. Stephen Monk

Professor A

Professor A is just concluding the culminating lecture on one of his favorite topics in his field. In earlier lectures, he painstakingly laid the groundwork, explaining each element and placing each detail of the theory in its proper relationship to the others. Today, he carefully ties the various components together to exhibit one of the most beautiful and powerful theories that he knows of. Each time that he lectures on this theory, he more clearly understands its depth and subtlety, and his lectures improve accordingly. Students find the theory difficult, and so he has learned to inject humor, personal views, and dramatic emphasis to get it across. Today, Professor A's pacing and timing work perfectly. He ends just in time to allow for his usual five minutes of questions. He asks, "Are there any questions?" A few students look up from their notebooks, but nothing else happens.

He fills the silence by raising some questions that naturally arise from the theory. Then, he answers the questions. The students dutifully record the answers. One student asks a polite question about a specific fact in the lecture, and Professor A uses the occasion to expound still more on the theory. Another student asks the inevitable questions about how much of the material will be on the exam.

When the bell rings, Professor A is stirred by mixed emotions. He is pleased with how well he pulled the lecture together--it is easily the best version that he has given--but he is bothered by how little the students seem to have been moved by it. He has enough experience to know what the absence of real questions means. The students probably admire both his performance and the theory. But they do not feel the power of the theory, and they do not grasp how economically it answers so many deep questions. What must he do to get the excitement of his subject across to students?

Professor B

In this chapter, we first examine the phenomenon of the Atlas complex. In the next section, we describe a third teacher, Professor C, who is very present in his class but who is not caught in the middle. This example allows us to broaden our perspective on the social organization of the typical college course and on the particular hold that it has on the teacher. Finally, we show the many ways in which this social system can be modified to free teachers from the middle without violating their sense of themselves as teachers. Such modifications should broaden and enrich their view of what they can accomplish as teachers. The result should be a more fulfilling teaching experience and a greater sense of what is possible--in short, a dissolution of the Atlas complex.

The Two-Person Model

Most teachers and students conceive of the heart of education as a two-person relationship. The ideal relationship is that of tutor and tutee alone in a room. Classes are seen only as an economic or pragmatic necessity in which one person--the teacher--either simultaneously engages in 10 or 300 two-person relationships with separate individuals or addresses a single undifferentiated entity--the audience. Teachers who view their classes as an elaboration of the two-person model are cut off from the potential energy and inspiration that lie in student-to-student interaction or in the mutual support that a group of individuals working toward a common goal can provide. Consequently, it becomes the responsibility of teachers to provide motivation, enlightenment, and a sense of purpose. Like Atlas, such teachers support the entire enterprise.

The sense of fixedness that stems from the two-person model of teaching has both a cognitive and a social component. The cognitive component stems from the teacher's expertise in subject matter, while the social component results from the teacher's occupying the role of group leader in the classroom. Teachers invest a large quantity of their time, energy, and hard work in becoming experts in their disciplines. They have a comprehensive understanding of their subjects and detailed knowledge of their subjects' intricacies and skills. How can they withhold these things? And if students do not get the point the first time, what can teachers do but give again or give more? By the very terms of the encounter, students lack something that the teacher has in abundance; thus, every activity in which the teacher does not give this "something" must play a secondary role. Teachers assume that their principal task is one of improving the ways in which they express their expertise: Clear and precise explanation can always be articulated and sharpened; penetrating questions can always be made more penetrating.

The social component of the sense of fixedness derives from the teacher's role of group leader. The literature on the social psychology of small groups (Slater, 1966) demonstrates that most groups in their early stages can be described precisely by the

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Teachers

The social component of the sense of fixedness derives from the teacher's role of group leader. The literature on the social psychology of small groups (Slater, 1966) demonstrates that most groups in their early stages can be described precisely by the two-person model; that is, each member acts as if he or she were in an exclusive dyadic relationship with the leader. It is a long and arduous process for group members to break their dependence on the leader and to form mutual bonds with one another. But teachers are more than just leaders. Their expertise in the subject matter exacerbates the problem that all leaders face if they want to distribute responsibility to the individual members of the group. The teacher is the very embodiment of the group's goal--the subject matter. There is no doubt that teachers have all the answers. Why should students look to anyone else?

These forces hold teachers in place with their Atlas-like burden of responsibility. They prevent teachers from sharing some of their responsibilities with the group's members. But some teachers do try to make such a change. They allow individual students to take turns at leading the class, they form study groups of various kinds, they try to restrict their role in discussion to that of facilitator or resource person. And, when they encounter the intensity of the forces, they find themselves pushed back into the center by a cognitive force, by a social force, or by both.

The most striking consequence of allowing students to interact directly and collectively with subject matter without the teacher's mediation is that the teacher comes face to face with students' own partially formed and inadequate conceptions of the subject. As experts with carefully articulated and elaborative views of their subjects, and as representatives of their disciplines, teachers are bound to feel a strong personal discomfort in the presence of the kind of imprecise, loosely connected, unintegrated comprehension that students have of their subjects. Thus, the very act of opening up and listening to students forces the teacher-expert back into the middle because imprecise explanations cannot go unrefined, because all the connections have to be made, and because final conclusions have to be drawn. In short, the teacher returns to the center in order to mediate between the students and the material.

For their part, students are likely to resist the teacher's attempt to step out of the middle because they perceive this switch in roles as an attempt to abandon responsible leadership. Students who feel abandoned resent their teacher, and consequently they do not develop the enthusiasm necessary for learning. This in turn leads the teacher who tries to innovate and share responsibility for learning to become cynical about students. The primary reason for this sequence of reactions is that when teachers switch from the role of expert to the role of helper, their expertise gets lost.

If students have no way to draw on the teacher's knowledge of the subject, it is natural that they learn less. The attempt to break the two-person model and to cause students to draw on the resources of the group can easily lead to a lowering of the intellectual goals of the class, in the eyes of both teacher and students. And since this is usually judged to be unsatisfactory, the teacher returns to the role of expert, and the students settle back into their seats to take in the teacher's illuminating words.

We have described the way in which the cognitive and social aspects of the two-person model keep teachers in the middle of their classes, carrying all the burden and responsibility of the course on their own shoulders. We have also described how the forces that typically operate on teachers, both from within and without, tend to move them back to the center when they try to leave it. People approach teaching with a set of conventional beliefs about the teacher's role that are strongly reinforced by being in the middle. Years of experience then fuse these beliefs into a whole, so that they cannot be differentiated, questioned, There is or tested. Instead, they form a complex--~~a~~ monolithic and undifferentiated state of mind that gives teachers so much responsibility for everything that goes on in the class that they cannot move--a state of mind that we call the Atlas complex.

But a teacher who takes responsibility for all that goes on in the class gives students no room to experiment with ideas, to deepen their understanding of concepts, or to integrate concepts into a coherent system. Most teachers agree that these processes, together with many others, are necessary if students are to understand a subject matter. Any teacher will say that the best way of learning a subject is to teach it--to try to explain it to others. Scientists agree that intellectual exchange, discourse, and debate are important elements in their own professional development.

Almost anyone who has learned something well has experienced the particular potency that a collaborative group can have through its ability to promote and make manifest such intellectual processes as assimilating experience or data to conceptual frameworks, wrestling with inadequacies in current conceptions, drawing new distinctions, and integrating separate ideas. The evidence that collective work is a key ingredient to intellectual growth surrounds us. Yet, to judge by the typical college course, most teachers do not believe that it is either appropriate or possible to foster these important processes in the classroom.

Professor C

Before we examine how the Atlas complex can be dissolved, we will describe a class that does not have a teacher in the middle and that still benefits from the teacher's expertise. This should show that change is possible--that the forces holding the teacher in the middle are not irresistible. It should also illustrate the point of view that we wish to advance in the next section.

Professor C walks into his class of 40 students and hands out a dittoed "worksheet" to every student. The students continue to chatter as they glance at the worksheet, start to form groups of five (as the worksheet instructs them to do), and seat themselves around the tables in the room. Gradually, the noise level falls as students read through the worksheet. Then, it rises again as they begin to engage in discussion with one another over the questions on the sheet. After a few minutes, Professor C joins one group, where he quietly watches and listens, but does not talk.

A few minutes later, he moves to another group. After listening to the discussion there, he suggests to group members that they are not getting anywhere because they misunderstand the example given in the first question. He tells them to draw out in pictures what the example describes, and as they do so, he makes clarifying comments. He listens as discussion resumes, then moves to yet another group. Meanwhile, many students are not only talking but also making notes as they do. Some groups are engaged in heated discussion; others are quieter, as individuals pause to think or to listen to a member who reads a passage aloud from a reading that accompanies the worksheet. In one way or another, however, all the groups are working with the sequence of questions and instructions contained in the worksheet.

Professor C may seem to be a teacher with no real function; indeed, he may even seem irresponsible. But keeping a class of 40 students actively involved with course material with a minimum of direct support from the teacher requires an artfully written set of instructions and questions. Professor C puts all his expert knowledge, his most provocative questions, and his insights about how students comprehend the material into the worksheets. Breaking down his own finished knowledge of his discipline into its component processes, then provoking students to discover these processes takes at least as much intellectual work as a finely crafted series of lectures would require. But, having done this work and set the students to interacting with one another and with the worksheet, he becomes free to perform a number of helping teaching functions as well as to expound, probe, or press on the basis of his expertise. He can also take time just to listen to students. He is free to choose. (For a more complete description of the worksheet approach and its uses, see Finkel and Monk, 1978, 1979.)

Professor C revises his worksheets after watching his class interact with them (this is where listening becomes important), just as Professor A revises his lectures every time that he gives them. The difference is that Professor C bases his revision on direct observation, while Professor A must rely on his own perception of how he has done, supplemented by a few polite questions and test results. Like Professor B, Professor C always feels that livelier and deeper conversation would result if he only could ask better questions. The difference is that

Professor C can gain a clearer view of what actually happens than even most seminar leaders can.

We offer the example of Professor C not as a model for Professor A, Professor B, or any other teacher to imitate. Answers to teaching problems are never that easy. The example of Professor C shows that a teacher can be in his class without being caught in the middle. We will use this example to illustrate a principle that lies behind a variety of possible course restructuring and that helps to relieve the teacher of the Atlas complex.

From Roles to Functions

Professor C serves as an expert in his class primarily through his worksheet. Since students focus on it and not on him, he is free to give clear explanations, to press for clearer answers, and to encourage hesitant students. The power of this approach stems from a fundamental differentiation of the teaching functions that make up the role of teacher. When these functions are differentiated and then distributed throughout a course, many of the constricting features that come from the role of teacher disappear and with them, the peculiar symptoms of the Atlas complex.

Brown (1965) observes that "roles are norms that apply to categories of persons" (153). In this case, the category is teacher, and anyone who fills that role is expected to follow a certain set of norms in his behavior. Moreover, roles do not exist in isolation; they are defined in interlocking sets, within the context of a given institution. In defining the role of college teacher, we necessarily define norms for college student as well. Social life flows smoothly because of these sets of roles.

People enter the social arena knowing in advance what to expect; they have to be confident that the range of unpredictable behavior is strongly limited. Teachers who want to teach in a strikingly different way, for pedagogical reasons, usually find themselves crossing the limits of their role, violating some of the rules that define it. Students will be the first to force them back into doing what teachers are supposed to do, that is, into the conventional role of teacher. Thus, the very predictability that we need from roles can become so rigid by force of habit that the roles of teacher and student become overly restrictive and actually exclude the usual needs of cognitive life in the classroom.

Suppose now that teachers focus not on how they are supposed to behave but on the job that they are supposed to accomplish. Most teachers understand this job to involve such things as getting the students to understand a given theory, having students examine certain phenomena from a new perspective, or teaching students how to perform new skills. Each goal leads to certain mental processes that must be carried out. These processes include organizing and synthesizing a variety of specific facts, ideas, and events into a general scheme; engaging the particulars of a context or experience while maintaining a perspective on its general qualities and compressing and crystallizing connections made within the discipline or between a discipline and the area that it describes. Each process requires a different form of work from students and a different form of assistance from the teacher. A teacher operates in quite different ways depending on whether students are to organize and synthesize, to engage, or to compress and crystallize. Even within each mental process, the teacher has to make choices to act. We call particular ways of operating in a classroom *teaching functions*.

For instance, to get students to organize and synthesize specific facts and events into a general scheme, the teacher can perform such teaching functions as asking students to give their current interpretations of the specific facts and events, laying out projects that allow students to devise their own schemes, responding to students' work, and presenting the teacher's own organizing scheme.

In designing his worksheet, Professor C performed such teaching functions as interpreting student misconceptions, setting goals and tasks, and analyzing his subject matter. In his classroom, Professor C performs such teaching functions as listening to students, redirecting them, clearing up misunderstandings, and supporting students. Notice that analysis of classroom roles ties behavior to persons (teacher, students), while analysis of teaching functions ties behavior to tasks that must be accomplished. Some teaching functions can be performed just as well by students as by the teacher. Other teaching functions can best be performed by groups of students or even by combinations of student groups. As we show in the next section, a conscious decision about which teaching functions are to be performed by whom and where can be made as part of the design of the organization of the course.

The perspective of teaching functions makes the strong negative effects of thinking in terms of teaching roles quite clear. First, any role is inevitably confining. Many teachers acknowledge that a particular teaching function should be performed but that it is not. They say, "Such things are not done" or "Students won't stand for it." This is only a way of saying that their particular role does not permit it. And, because the role does not permit it, most teachers are not inclined consciously to articulate what teaching functions they deem most important for their students' learning.

Second, the language of roles itself creates dilemmas about the ways in which people are to behave. Teachers ask, Is my role of teacher one of expert or helper?, as if they must choose between these two roles. The conflict disappears if the teacher performs functions that require expertise at one time and place and functions that require helping at others. To say that students must be *independent* (bold, skeptical, imaginative) and *dependent* (relying on the accumulated knowledge of past generations) sounds like a contradiction because it is couched in the language of roles. The adjectives prescribe contradictory norms for a category of persons. But if we say instead that some of the activities in which a student must engage require independence and that others require dependence, then the contradiction disappears. There is a time and a place for both independence and dependence when each characterizes a mode of engaging in a specific activity. But, as role descriptors they contradict each other.

Third, roles tend to generate their own work to be done, so that the teacher's activities are determined not by tasks but by roles and expectations. Thus, Professor A becomes a performer caught up in such functions as polishing, timing, and motivating, while Professor B becomes a stage manager of discussions who looks for the perfect sequence of questions so that the actors can play their parts.

Fourth, every role includes several distinct functions. When these functions are performed simply as part of the role, they tend to blur and merge; they are performed simultaneously, but none is performed particularly well. In trying to get feedback after he has spent 45 minutes driving his points home, Professor A is fooling himself. Likewise, in trying to manage a discussion among students while maintaining high standards of rigor, Professor B performs neither function. A lecturer who gives illuminating examples to stimulate students' thought processes and then immediately gives her own perspective to explain these examples can think of herself as engaging students in a particular context and inviting them to form their own view of it, which she will then enrich. But, for students to perform such an activity in fact requires behavior from the lecturer that the students would not tolerate. Thus, Professor B's students do not really go through the process, and she really performs just one function, exposition.

Distributing Teaching Functions in a Course

While most teachers acknowledge that their role is confining and wish to perform a wider array of teaching functions, they find that good intentions, even when backed by strong resolve, do not go far to promote change. To effect genuine change, a teacher must first differentiate teaching functions, then distribute them in the course so that the responsibility for learning is shared with students. Only then can the Atlas complex be dissolved. To do this, the various parts of the course must be clearly distinguished so that the functions appropriate to them can be distributed.

When we think of making structural changes in a formal organization, such as a corporation, the candidates for transformation are immediately apparent. For instance, we can alter channels of communication, or change the authority relations between officers, or merge or divide departments. Like a corporation, a course is a social system. However, when it is viewed simply as a teacher and some students, it seems to lack the structural components that a corporation has, and thus it seems to lack candidates for transformation.

To distribute teaching functions, the teacher needs to distinguish three components in his course: specific activities that serve general teaching functions, people responsible for performing these activities, and the "places" in the course where these activities are performed. For instance, a teacher who wants to perform the teaching function of giving his own perspective on the subject can choose among such activities as these: giving a lecture, having students study a few key examples that exemplify the significance of his own perspective, and asking a highly convergent sequence of questions that point to that perspective.

Further, there are many choices as to who performs each particular activity. The typical choice is between the teacher and individual students. However, there are additional candidates for this responsibility: Small groups of students working together can take over some teaching functions. In some instances, the entire classroom group can do so. Finally, there is an enormous array of "places" in any course where various teaching functions can be located. The obvious places include class sessions, tests, homework assignments, office hours, lectures, and quiz sections. These can be refined to include such places as Friday's class, critiqued but ungraded homework, files of past tests, required office conferences, and make-up tests.

Once teachers have differentiated the teaching functions to be performed and consciously distinguished the components of their courses that can be operated on, then they can make local decisions about the specific activities used to realize these functions, about where in the course the activity should be carried out. With this strategy for change, teachers can preserve existing activities that already serve important teaching functions and test new activities that may be able to take the place of activities that have not worked out well.

Faced with the complexities of the course as a social system, teachers may well wonder how to get started in such a program for change--particularly since, by our analysis, teachers themselves play such a dominant role in the system. Student learning groups, in which small numbers of students work together in a class without constant assistance from the teacher, can restrict the problem of systematic change to a problem of manageable size. Professor C divided his class into small groups that worked together for two hours, guided by the instructions and questions [illegible] the worksheet. Professor C performed many of the expert te[illegible]ng functions by writing the worksheet, so that he became free[illegible]n the class to perform many helping functions.

Working in groups, the students perform such functions as asking and answering questions, giving support and reinforcement, and providing fresh perspectives on the subject. Each small group of students serves other important functions as well, such as providing carrying energy and bringing out low participators. But, the concept of learning groups is extremely elastic. Learning groups can be permanent or temporary. They can work for five minutes, or two hours, or even longer at one time. They can be highly structured by the teacher or not. They can be required to devise group products, which are assigned group grades. Or, they can serve primarily as support groups for individuals.

Teachers who decide to use learning groups as part of a class, no matter on how small a scale, have taken a giant step out of the middle of their class, because in carrying out their decision, they distribute teaching functions, which forces them to deal with all the key issues involved in such a move. What concrete activities will be carried out in the groups? Who will have the responsibility for these activities? At what time and place in the course will learning groups be used?

Teachers who feel that a commitment to learning groups is too radical a step can take smaller steps in the same direction to divest themselves of some of their Atlas-like burden. For instance, Professor A could begin by distributing his beautifully polished lectures in advance and instructing students to read them as preparation for class. This puts him in a position to use the class time as an opportunity to serve a new teaching function. Since he is concerned with eliciting intelligent and informed questions from his students and with having a chance to respond to them, he can use the class period for just this purpose. He can have students bring prepared questions to class, where they can form the basis for a discussion, or he can simply respond to them publicly.

He can also take yet another step and use small temporary groups of students to drive the intellectual processes necessary for the assimilation and organization of ideas derived from his lecture. To do this, he can distribute a short list of conceptual questions along with his lecture, which each group of students can be responsible for answering. Student work of this nature would enable him to perform yet another teaching function: critiquing without grading the students' response to his lectures. This teaching function would not only be beneficial to the students; it would give him a sharper view of his students' conception of the subject matter.

In much the same way, Professor B could write out her telling and penetrating questions for students to work on as they did their reading. To reduce her dominant role in the seminar, she can choose a small number of teaching functions to perform during class, to the exclusion of all others. If she still feels that her expertise is not being drawn upon sufficiently, she can designate a segment of the seminar(the last 15 minutes of each class or the last class of each week)in which she answers student questions or comments on student answers. However, she must do this in such a way that students see clearly that the expected behavior for this segment of the seminar is different from the behavior expected in the rest of the seminar.

In the preceding paragraphs, we have made a number of recommendations about how a course can be changed by distribution of teaching functions. However, it is important to remember that, as a social system, a course is not just a variety of distinct structural components; these components are strongly linked. If a change in one part of the system is to have lasting effect, the teacher must consider how this change interacts with other parts of the system. Change that is not integrated into the system will either be isolated and nullified, or it will distort the entire system. For instance, if learning groups are introduced, then their relation to the evaluation structure of the course must be made very clear. Exams signal to students more clearly than anything else what the teacher really cares about, and students direct their behavior accordingly. Thus, if group work is to be taken seriously, the results of group work must be tested by exams. That is, there should be a clear payoff to students for putting their energies into the new activity. Similarly, if the teacher deems collaborative work among students to be important and the teacher works hard to foster it in class it makes no sense to grade exams on a curve, since students see such grading as a clear message that they are competing one with another.

However far one goes in distributing teaching functions, it is extremely important to set up clear boundaries around the various "places" in the course to which distinct teaching functions have been assigned. Places can be marked off by such means as a designated day of the week or time in the day, a different classroom format, a different medium, a different physical location, or a different mode of evaluation. As long as teachers are absolutely explicit about the nature of the different tasks to be performed in the places marked off by such boundaries, they can ensure the predictability of behavior that people require when they drop stereotypical roles.

A lecture carefully organized to give a highly polished overview of the subject indicates one set of behaviors for teacher and students, while a class period in which students work in groups on their first tentative explorations of the subject calls for another. A separate class period in which a panel of students presses the teacher with what they see to be the most important questions on the subject leads to yet another kind of behavior. As long as such class periods are clearly marked off, the diversity of expected behavior can create no confusion.

There is [illegible] and a place for students to be receptive and passive, [illegible]s and imaginative, challenging and doubting. Similarly [illegible] teacher can assume an authoritative voice for a lecture, become a listener and helper in a worksheet class, and answer questions thoughtfully and carefully before a panel of students. As one boundary after another is crossed in a course, teachers and students can alter their behavior quite radically. All flows smoothly--just as long as the boundaries are absolutely clear.

Dissolution of the Atlas Complex

The perception that each course is in fact a miniature social system is perhaps the key to teachers' dissolution of the Atlas complex. The Atlas complex is a state of mind that keeps teachers fixed in the center of their classroom, supporting the entire burden of responsibility for the course on their own shoulders. This state of mind is hardened by the expectations that surround teachers and by the impact of the experience that results from them. A direct assault on the complex is doomed to fail.

The solution that we propose here is indirect. By focusing teachers' attention on their course as a social system, not on themselves as filling a role, we suggest that teachers can take specific, concrete actions that enable them to share responsibilities in the classroom. To do this, teachers must distinguish the various components of a course--the structural parts that comprise the social system--and distribute teaching functions into them.

There is a continuum along which the teacher can make such changes, ranging from small moves that share responsibility with students as individuals, to use of learning groups, which allows small subgroups of students temporarily to assume a number of different teaching functions, to delegation of major responsibilities to the entire group. We have found that the middle course of action--learning groups--is the most effective way to begin, for it opens up a great number of local possibilities for change while allowing the teacher to keep the fundamental structure of the curriculum and teaching intact.

Most teachers start with a small change, which enables them to experience their teaching in a different way and enriches their view of their course as a social system containing diverse teaching functions. This step leads to alterations in their own and their students' expectations of themselves, which deepen and expand their sense of further possible steps for change in the course. Each further step alters both their experience of teaching and their sense of what is possible. Only in this way is it possible to dissolve the Atlas complex.

Finkel, D. L., & G. S. Monk. (1983) Teachers and learning

groups: Dissolution of the Atlas complex. In C. Bouton & R. Y. Garth (Eds.), Learning in groups Directions for Teaching and Learning, no. 14. c 1983 by Jossey-Bass Inc., Publishers. Reprinted with permission. All rights reserved.

Ed.'s note Group work in class does not always work well automatically. Some groups even fail. Fiechtner and Davis set out to learn some of the reasons why this is so by asking college students about both their most and least successful group experiences. This article summarizes what students reported. Most helpfully, the authors distill student experiences in a concrete set of suggestions of what *not* *to do as you begin to set up groups in your classes.*

Why Some Groups Fail: A Survey of Students' Experiences with Learning Groups

Susan Brown Fiechtner and Elaine Actis Davis

Leaving campus late one afternoon toward the beginning of the semester, we overheard the following conversation between two students:

> This promises to be a real 'fun' semester. I have three classes that require group work. I just hate it when I have to depend on other people for my grade!
>
> Yeah, that's the pits! I know exactly what you mean. That happened to me last semester and my grades really took a dive. Is it too late to change sections?

From the (often blind) viewpoint of instructors, we had always viewed group work as an added advantage for the students--an opportunity to receive additional support while working closely with their peers. We had never really considered what a disastrous experience some frustrated students must endure, or why some students reported only positive experiences from classes utilizing group learning techniques.

The issue of group learning has become an even greater concern in recent years as more college and university professors have begun to incorporate specific group assignments (i.e., assignments which require that students meet as a group and equally contribute to a final product) into their class requirements. There are several reasons for this movement toward an increased number of group assignments. In recent years there has been a marked trend for business decisions to be made within groups rather than by individuals acting solely on their own. One possible reason for this is the growth of professional management teams, together with the general movement within the business world towards more participative management styles. Arguably the most important single factor is that as the business environment has become more complex, the ability of any one person to cope with it satisfactorily has been greatly reduced. Hence, group learning is an attempt to introduce students to real-world experiences before graduation.

On the surface, this sounds like a good idea; however, survey data reported in this study reveals that many things can and do go wrong when instructors incorporate group work into their assignments. Entirely too many students are leaving the classroom experiencing only the *frustrations* of group work and not the numerous *benefits* possible through team effort.

The purpose of the present descriptive report is, therefore, to identify some of the reasons for students' negative reactions to group work in the classroom. Hopefully, the information reported here will aid instructors in evaluating the source of any problems they have experienced in using group work and enhance the development of better group-oriented classes and assignments.

The Student Survey

During the fall semester of 1984, we distributed an 18-item survey to students enrolled in several upper-division speech communication and business policy courses at two major southwestern universities. This questionnaire asked students to list the title of the course in which they had their most positive and least positive classroom group experience. The survey contained 14 closed-ended items that were used to collect data on the composition of the groups, the grading system, and the nature of the classroom activities and graded assignments. In addition, the survey contained three open-ended items that asked students what they thought was the most important reason that the learning groups worked better in one class than in the other and what they felt were the most positive and most negative aspects of working with classroom groups.

Of the 215 questionnaires returned by the deadline, 155 were usable. Sixty questionnaires were omitted because respondents either misinterpreted the instructions or provided data on only one group experience. The majority of the subjects (97 %) were classified as upper-division students.

From The Students' View

Table 1 contains a frequency count of the specific subject areas in which students reported having their least positive and most positive group experiences. We were not surprised to learn that organizational behavior was the most frequently listed subject area and were also pleased that it was listed in the positive column. However, we were quite surprised to find such a wide range of subject areas in which students are required to participate in group work and also that organizational behavior courses represented only 15 % of students' experiences with learning groups.

We also asked students to rate each of the courses on a scale of 1 (a complete waste of time) to 10 (an extremely valuable learning experience). The overall mean for their most positive group experience was 8.7, which justifies our optimism about the potential of learning groups. We were somewhat surprised, however, that the overall mean for students' least positive group experience was just above the midpoint of the scale (5.2).

Structuring Groups

We were quite confident that the composition of the groups would have a significant impact on their success or failure in the learning process. As a result, we asked students how their groups were formed (instructor's choice, students' choice or combination), the number of members their groups contained, and the duration of their group's existence (see survey, questions 4-6).

Table 1
Percentage of Least Positive
Most Positive and Total
Groups by Class

Course	Percent of Least Positive Groups	Percent of Most Positive Groups	Percent of Total Groups
Organizational Behav.	0.0	30.3	15.2
Marketing	15.5	5.2	10.3
Business Communication	3.9	15.5	9.7
Accounting	18.7	0.0	9.4
Speech Communication	0.0	14.2	7.1
Finance	13.6	0.0	6.8
History	12.9	0.0	6.5
Computer Science	7.1	2.6	4.8
Math/Statistics	9.0	0.0	4.5
Sociology/Psy.	1.9	6.5	4.2
English	6.5	0.0	3.2
Physical Education	0.0	4.5	2.3
Journalism	0.0	3.9	1.9
Law	0.0	3.2	1.6
Misc. Others	11.0	14.2	12.6

(PLEASE IMPROVE LAYOUT)

Their responses indicated that students are more likely to have positive experiences in classes where groups are either formed by the instructor or by a combination of methods (e.g., one instructor collected data on students' research interests and then grouped those with similar preferences). Specifically, in recording information concerning their *worst* group experience, 40% of the respondents noted that the groups were formed by the students themselves, while in the *best* group experience, only 22% reported that the students were responsible for forming the groups. Thus, by nearly a 2 to 1 margin, if students formed their own groups they were also likely to list the group as being a *worst* group experience.

Several of the responses to the open-ended question regarding reasons for the learning groups working better in one class than in the other (see survey, question 3) also provide some insights into the problems often created by letting students form their own groups. For instance:

> We got to choose our groups and I was the only one not in a sorority. I felt left-out all semester.
>
> When we formed our group, we didn't realize how important it would be to have someone who was good on the computer, so we were always at a disadvantage.

One of the disappointing aspects of our inquiry was that a large percentage of respondents were confused by our question concerning the degree of permanence of the groups (see survey, question 6). As a result, the only data we are comfortable reporting comes from the open-ended questions (see survey, questions 3, 13, and 14). This data indicates that the groups need to remain stable enough for group cohesiveness to develop so that the groups can work effectively on their tasks. Otherwise, the group work is extremely frustrating. For example, one student reported:

> Group members were not the same for each project. Every time I learned someone's name and phone number he changed groups on us--just like fruit basket turnover.

The size of the *worst* groups ranged from 2-12 members (mean = 6) and for the *best* groups from 3-16 (mean = 5). Thus there were minimal differences between the worst and best group experiences. However, group size was mentioned by several students as a problem due to the logistics of arranging outside meeting times. As one student reported:

> There were too many people (8) put in each group in my first group class, which made it almost impossible to arrange times to meet outside class.

Taken together these results offer a number of guidelines with respect to structuring groups that are also consistent with our own experience. One is that four to seven member groups do very well, while smaller groups often lack resources and larger groups have difficulty maintaining cohesiveness. In addition, we strongly advocate the use of permanent, heterogeneous groups formed by the instructor. Although some students may prefer the freedom of making this choice, it often prevents close friends (sorority and fraternity members, foreign students, etc.) from forming subgroups from the start. Learning to work with a new set of peers and forming interpersonal relationships is an added advantage of group work.

Group Activities

We also felt that the type and number of graded group activities made a significant difference in students' perception of the learning process. Students were asked how many graded assignments their groups were required to complete in both their *worst* and *best* groups (see survey, question 10). (The types of assignments reported were research projects, class presentations, written reports, and group exams.) Research projects and class presentations were required in just over three-fourths of the groups (76% and 77% of the groups respectively). Nearly all the groups (94%) used written reports, while less than one third (30%) of the groups took group exams.

Our results indicate that an increase in the number of graded group projects had a very different effect depending on the specific type of assignment. For example, although research projects were frequently used in group work, the number that were assigned did not appear to make any consistent difference in the students' overall perceptions of their group experiences. On the other hand, the number of class presentations which were required did affect their experiences. Students were much more likely to report a *best* group experience in classes in which either no class presentations were required (6:1 ratio) or in which only one was required (3:1). However, when two or more class presentations were required, students were much more likely to report a *worst* experience (1:2.5 for two; 1:2 for three; 1:3.5 for four; and 1:1.5 for five or more).

Written reports had a similar but even more pronounced effect. Although the number of groups was small, when no written reports were required, students were much more likely to report a *best* experience (8:1), and the probability was even higher with one or two reports (25:1 for one; 9:1 for two). When three written reports were required, there was almost no difference in the proportion of students reporting *worst* and *best* experiences. When four or more written reports were required, however, students were much less likely to report a *best* experience (1:4 for both four and five or more).

Probably the most dramatic finding concerning the number of different kinds of graded group activities was with respect to the number of group exams. In this case, an *increase* in the number of group exams greatly enhanced the probability that students would report a *best* group experience. Only one of eight students reported a *best* experience when no group exams were given as compared to only one of eight students reporting a *worst* group experience when five or more group exams were given.

In addition, the data from the open-ended questions (see survey, questions 3, 13, and 14) alerted us to another potential problem with respect to the number of assignments. Several students indicated that having too few graded group assignments was detrimental to the process. As one student put it:

> We only had two group projects to complete all semester--so there was NO time to become cohesive.

Taken together, these finding appear to present a dilemma in deciding how many and what kind of graded group activities to employ. On one hand, it is important to have enough assignments so that the groups have the opportunity to become cohesive, while on the other hand, too many activities appear to have a negative affect.

In our judgment, this dilemma is caused by the problems that students encounter in trying to coordinate their efforts in order to complete the group assignments. In an attempt to minimize these logistical problems, most groups will divide up the work in an appropriate way. For example, if a five-member group is asked to analyze five cases, the vast majority will agree to assigning one case to each member, thereby virtually guaranteeing that students will experience many of the negative aspects and few of the benefits of working in groups.

Fortunately, the data from the survey also suggest at least two solutions to the problem. One is giving a series of group exams. This provides the groups the opportunity to become cohesive and also enhances the quality of students' experiences with learning groups. In our opinion, the reason that group exams are ideally suited for this purpose is that they insure that the output from the groups will not be a series of projects completed by individuals working in isolation. The other potential solution involves providing the opportunity to work on group assignments in class.

In-Class vs. Out-of-Class Group Work

We felt that providing a significant amount of in-class time for group work in addition to the amount of time spent on group assignments outside of class would impact students' perceptions of the learning process. Therefore, we were interested in discovering what percentage of the total class time was devoted to group work plus the amount of time students spent on group assignments outside of class for their best and worst groups (see survey, questions 7 and 8). Interestingly, we found that in students' worst group experiences, only 10% of the total class time was devoted to group work, and an average of 22 hours was spent in group work outside of class. In contrast, in students' *best* group experiences, an average of 36% of the class time was devoted to group work with an additional 31 hours spent outside the classroom setting. This confirms our belief that the more time students spend working on projects both in and out of class, the more cohesive the group becomes, thus making for a more positive group experience.

Grading System

The results from our question concerning the percentage of the grade determined by group work (see survey, question 9) clearly indicate that it is important to include a substantial group performance dimension in the grading system of classes in which students are required to work in groups. For example, in classes in which less than 20% of the course grade was determined by group work, the proportion of students reporting a *best* group experience was only one in six. When group work counted for more than 20% of the course grade, however, the ratio was reversed with the *majority* of students reporting a *best* group experience. The margin was as high as nearly two to one when group work accounted for between 41% and 80% of the grade.

The results also indicate that it is important to utilize peer evaluations as a part of the course grade (see survey, question 1). When no peer evaluations were used, only one student in three reported a *best* group experience. By contrast, three students out of five reported a *best* group experience when instructors employed a grading system in which peer evaluations counted for between 21% and 40% of the course grade.

Data from the open-ended questions also point to the value of employing peer evaluations as part of the grading system. For example:

> There were no peer-group evaluations, so some people just got to ride free.
>
> We were forced to cooperate with each other because of the peer evaluations.
>
> This often happens in the real world and taught me many things about human nature.

On the other hand, the data also suggest that peer evaluations should be used with caution because they can produce problems. Our results indicated that if student influence on the grade is too great (over 61%), the impact of peer evaluation will probably be negative. Furthermore, unless the peer evaluation process is carefully thought through, it can cause a great deal of resentment on the part of students. For example, one student wrote:

> I really got burned/ripped on the evaluations at the end of the term, and I did the same amount of work as anybody.

Actual vs. Expected Grades-the Importance of Feedback

Another aspect of grading that was related to students' perception of the value of learning groups was the extent to which there was a discrepancy between the grade they expected and what they actually received. For example, although students received lower grades than they expected in both categories, the discrepancy was nearly five times as great for the *worst* groups (see Table 2).

Table 2
Expected vs. Actual Grades

Groups	Worst Groups	Best
Expected GPA	3.04	3.17
Actual GPA	2.35	3.03
Discrepancy	.69	.14

(PLEASE IMPROVE LAYOUT)

Because the survey did not require the students to list reasons for this discrepancy between expected and actual grades, we can only speculate as to its causes based on their responses to the open-ended questions (see survey, questions 3, 13, and 14). One factor for some was that they felt like they got burned on the peer evaluations. Another was that a substantial proportion of the grade was determined by a group project that was due at the very end of the term. In particular, this is a problem when students divided up the work in a way that does not require them to be actively involved with other students prior to the time that the assignment is turned in. When this happens, students are unaware of either deficiencies within or lack of integration between other sections of the overall group project. Irrespective of the reasons, however, it is apparent that we need to structure both the assignments we require and the feedback process we employ so that students 1) understand what we expect them to produce, 2) are familiar with the entire "product" that is submitted by their group, and 3) have multiple opportunities to receive feedback on their performance.

When Things are Not Going Well

Students

The [illegible] rom the open ended questions provided several insights into students' perceptions about the reasons why some groups aren't productive or effective. One of the most crucial reasons is that, overall, they are very likely to blame the group's problems on the attitude or lack of competence of the instructor. Other sources of frustration included logistical or workload problems, unmotived or incompetent peers, and group process deficiencies. For example, the most frequently cited response to both "What do you think is the most important reason that the learning groups worked better in one class than the other?" and "Overall, what do you feel was the most negative aspect of your experience with small groups in the classroom?" was that the instructor was either incompetent or shirking responsibility. Sample comments included:

> The instructor was totally incompetent in the class. She couldn't even answer the most simple questions!
>
> Her (instructor's) attitude was terrible! This was just an 'easy out' for her so she wouldn't have to lecture!
>
> The teacher was never around when we needed him; he just assigned an ambiguous project then went to drink coffee. What a jerk!
>
> I think he just put us in groups because that's the fad now in the Business School.

In contrast, there were absolutely no complimentary statements about instructors for either of the open-ended questions recorded above, when the "negative" was replaced with the "positive." Thus, at our universities instructors who use groups are liable for much of the blame when problems occur but are not likely to receive credit when the groups are effective. As a result, when we choose to utilize groups in our classes, it is imperative that we do all we can to remove the legitimate causes for criticism, increase students' commitment to the groups, and increase students' ability to make the groups work effectively.

Staying Out of Trouble

There are a number of steps we can take as instructors to minimize the negative feelings that students are likely to develop from being required to do group work. One technique is to think carefully through why we want to use groups to communicate this rationale to our students through the ways we structure their group experiences. For example, if we want students to develop higher level skills in group problem solving, we should use heterogenous groups and give them multiple opportunities to make decisions and receive feedback on their performance. Another strategy is helping students to establish realistic expectations about the group work we assign by contrasting both student and instructor roles in our classes with their experiences in other courses--particularly those that may have used group activities inappropriately. An additional key is being meticulously prepared for all classroom activities. Many of our most negative experiences have occurred when we have overlooked even minor details, such as a typographical error in our instructions to the groups or the fact that we needed a two-pronged plug for some video equipment that was essential to a group activity. It is inviting trouble to have groups either struggling or sitting "twiddling their thumbs" when they think you could have avoided the problem with a little more attention to detail.

We also feel that it is important to "listen in" while the groups are working. This allows us to detect our mistakes early and to minimize students' frustrations. This also seems to provide them with a visual demonstration that we're still doing our job. In addition, we have found that providing immediate feedback on group projects is helpful because it reduces students' frustrations. This also seems to provide them with a visual demonstration that we're still doing our job. In addition, we have found that providing immediate feedback on group projects is helpful because it reduces students' most frequently expressed fear--that we are allowing "the blind to lead the blind."

Possibly the factor that has the greatest impact on whether or not group work will produce a positive or negative student reaction is the degree to which activities and assignments are perceived as being relevant to the content of the course. This conclusion is based on the responses of the 72 students who reported having the worst group experiences with learning groups. Twenty-four students identified relevance as the number one distinguishing factor between their most positive and least positive group experience. For example:

> In one class the assignments were just 'busy work' --there was nothing relevant to gain.
>
> Nothing was relevant to real-world situations.
>
> She [the instructor] researched organizations and came up with real questions and problems, not just something to keep us busy.

In addition to providing grade incentives, the most effective strategy we have found for increasing students' commitment to their groups is to employ a wide variety of activities that accomplish learning objectives and at the same time increase the cohesiveness of the groups. One of the most useful methods has been to involve students in the development of the grading system through the use of the "Grade Weight Setting" exercise (see [illegible]haelsen, Cragin, & Watson, 1981). This activity ensures that students understand course requirements, are committed to a grading system that provides incentives for groups' work, and also stimulates within each of the groups a discussion about individual constraints (e.g., work schedules) and the degree to which they might affect their ability to perform effectively. Another method is to provide immediate feedback to the class with respect to the performance of each of the groups. (The positive impact of this strategy grows dramatically with either the number or the variety of group activities since this creates more opportunities for each of the groups to be a winner.)

We also encourage students to sit together and when possible provide a visual means for identifying group membership. For example, we have the [illegible] under a set of numbered cardboard pyramids that we constructed and have attached to the ceiling of the room. In addition, in some of our classes we encourage students to assign a name to their group and possibly a group logo to use for identification purposes. For instance, groups working on a semester-long simulation analyzing refrigeration companies created group titles such as "We Be Kuhl," "Polar Bares," "Nice Fellows on Ice," and "Frozen Assets Unlimited." We also use a number of exercises that expose students to various communication problems within groups. One of our favorites is "Exercise Brazil" (Huse & Bowditch, 1977), which is a simulation where the correct answer is impossible to obtain unless all group members contribute.

A Profile for Failure

At this point we are confident that we can identify a set of tactics that 1) are deliberately employed by a significant proportion of well-meaning instructors, 2) when employed individually will measurably reduce the effectiveness of learning groups, and 3) when employed in combination will virtually ensure that learning groups will be counterproductive. These damaging but frequently used tactics are summarized in Table 3.

Table 3
What NOT To Do

When forming group [illegible] do not

- allow students to form their own groups or deliberately create homogeneous groups.
- establish groups that are either too small (3 or fewer members) or too large (8 or more members).

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- dissolve and re-form the groups on a frequent basis, such as after each activity or simulation.

When formulating grading policies, do not

- minimize the extent to which group performance affects students' grades.
- limit group work's influence to less than 20% of the total grade (or base a very large proportion of the grade [60% or more] on a single assignment--this one didn't show up very often but when it did the negative consequences were severe).
- leave out any form of peer evaluation in the grading system.

When providing feedback on group work, do not

- structure the group assignments so that students can easily figure out a way to work independently and still get the job done.
- have the group work turned in as late as possible in the term.

When planning group activities and assignments, do not

- assign two or more class presentations.
- assign four or more cases or other written reports.
- avoid group exams and do not give more than four.
- use the absolute minimum of class time for group work.

(PLEASE IMPROVE LAYOUT)

Conclusion

The teaching methods and skills involved in group learning classes differ significantly from those utilized in the traditional classroom, for both the role of the student and the teacher changes in the radical way. As is evident from this survey, this difference in methods is responsible both for the advantages of learning groups and for the limitations and difficulties inherent in their use.

Our experience indicates that these limitations can be overcome. If this is to be accomplished, however, content and skills cannot be separated in the classroom--*both* are an integral part of the learning process. Knowledge that goes beyond mere information is always knowledge of how to do something, and skills can be enveloped only through use. The trend toward more group work in classroom settings represents not only the continual development of innovative teaching approaches, but also a movement toward the development of higher order communication and problem-solving skills needed for the future.

Fiechtner, S. B., & Davis, E. A. (1984-85). Why some groups fail: A survey of students' experiences with learning groups. The Organizational Behavior Teaching Review, 9*(4), 58-71. Reprinted with permission of Sage publications. All rights reserved.*

STUDENT SURVEY OF GROUPWORK

We are interested in learning about the problems and benefits of using small groups as part of the instructional process. Would you please think of the *least* positive and *most* positive experiences you have had in classes in which you were required to work in a group.

Least Positive Most Positive

1. What were the course titles of classes in which you had your least (and most) positive experiences with learning groups? __________ _____

2. On a scale of 1 (complete waste of time) to 10 (extremely valuable learning experience), what is your *overall assessment* of the group work in these two classes? __________ __________

3. What do you think is the most important reason that the learning groups worked better in one class than the other?

We would also like to know about some specific aspects of the *way* in which the groups were used in the classes you listed in question #1 (ie., the classes in which you had your worst and best experience with learning groups).

Worst Best

4. How were the groups formed (1=Students' __________ _____

choice, 2=Instructor choice, 3=Combination)?

5. *How many members* were in your groups? __________ _____

6. Approximately what *proportion of the semester* elapsed between the time the groups were formed and the completion of their last assignment? __________ -------

7. Approximately what *percentage* of the total time in class was devoted to group work? __________ _____

8. Approximately what was the *total number of hours* you spent on group work *outside* of class? __________ __________

9. What *percentage* of the final course grade (if any) was determined by the group work? __________ _____

10. *How many* graded assignments of each of the

following kinds were the groups required to complete? (List all that apply.)

a) classe presentation ________ ____

b) group exam ________ ________
c) written report ________ ____
d) research project ________ ________
e) other ________________________________

11. Approximately *what percentage* (if any) of the final course grade was determined by a peer evaluation? ________ ________

12. What grade did you:
a) expect to receive? ________ ____

b) actually receive? ________ ________

13. Overall, what do you feel is the most positive aspect of your experience with small groups in the classroom?

14. Overall, what do you feel is the most negative aspect of your experience with small groups in the classroom?

BACKGROUND INFORMATION (Circle one response for each question.)

15. What is your sex? Male Female

16. Have you served in the armed forces? Yes No

17. What is your major field of study? ________________

18. What is your current class standing?
a. Freshman b. Sophomore c. Junior d. Senior
e. Graduate f. Other

19. In what age bracket do you fall?
a. 17-20 b. 21-25 c. 26-30 d. 31-35
e. 36-40 f. 41 or over
(PLEASE IMPROVE LAYOUT)

Ed.'s note: As seasoned practitioners with lots of experience developing and using cooperative learning experiences, Cooper and Mueck describe the critical features and positive outcomes of cooperative learning activities. Most importantly, they use their experiences at California State, Dominquez Hills to make recommendations about implementing cooperative learning in classrooms where it has not been used before. This article provides a great way to help you start your own cooperative learning classroom.

Student Involvement in Learning: Cooperative Learning and College Instruction

Jim Cooper and Randall Mueck

Cooperative learning is a structured, systematic instructional strategy in which small groups work together toward a common goal. Although over 1,000 studies have been conducted on cooperative learning at the precollegiate level, relatively few have been done using college students. In addition, many of the studies completed at the college level have suffered from methodological problems such as small sample sizes, lack of randomization in assigning subjects to treatment groups, and want of a clear, systematic operations definition of cooperative Learning. A review of the literature indicates that more than 10 descriptors have been used to characterize small group instruction. Such terms as collaborative learning, peer response groups, syndicate learning, and others have been used to describe procedures quite similar to cooperative learning.

Critical Features

We believe, like many others, that a number of critical features distinguish cooperative learning from other forms of team learning. Perhaps the most characteristic feature of cooperative learning is positive interdependence; that is, all members of a learning team are responsible for the learning of other members. Thus, in most cooperative learning classrooms, all members of a team work together to produce a common product. For example, in an educational statistics class for graduate students completing MA programs in education, the class meets for three hours once a week. Typically, the teacher lectures for two hours on topics such as group research designs, inferential and descriptive statistics, and sampling theory, then breaks students into heterogeneously formed groups based on graduate GPA. Teams are then given highly structured worksheets requiring group solutions to each of a number of problems. Team members are required to assist each other in understanding the solutions to all the problems. No one may ask the instructor for assistance unless all other team members have been consulted first.

A second critical feature of cooperative learning is individual accountability. One problem with traditional team learning has been the tendency for members of groups either to dominate or to "sandbag." In cooperative learning, a formal rule prohibits this behavior and is enforced by team members and the teacher. Another procedure designed to insure individual accountability is that only a small percentage of a student's course grade depends on group learning activities. Most of the grade, as in traditionally structured courses, depends on individually completed tests and papers. For example, in the statistics class, less than 3% of the total grade is based on successful completion of at least 10 team learning activities.

We believe that positive interdependence and individual accountability are essential components of effective cooperative learning classrooms. Team learning structures lacking either of these two features are more properly termed collaborative learning or team learning, but not cooperative learning.

A third feature of cooperative learning is the appropriate assignment of students to learning teams. Generally such grouping is heterogeneous, based on race, sex, prior achievement, and/or other characteristics determined by the instructor, for instance, on the basis of graduate GPA. Because of the diverse nature of the student population at CSU Dominquez Hills, groups tend to be heterogeneous with respect to race, ethnicity, sex, and age.

There may be times, however, when homogeneous grouping is preferred. For example, one of our colleagues teaches a course in secondary methods for students seeking to teach at the high school level. She assigns students to learning teams by academic major so that math majors are placed on one learning team, science majors on another, and so on.

Another feature of cooperative learning concerns the role of the teacher. In cooperative learning, the teacher designs the learning activities and monitors the groups as they are engaged in team learning. Rather than functioning solely as an expert, dispensing knowledge to students, the teacher in cooperative learning serves as a facilitator.

A fifth feature of cooperative learning is its explicit attention to social skills. Students are required to cooperate with one another and are often given explicit rules and guidelines for appropriate social skills. For example, in many cooperative learning classrooms, students are instructed that they may criticize an idea but not the person presenting the idea. Active listening is another social skill commonly stressed in cooperative learning. One might expect that college students possess these skills and that there is no need for the skills to be taught directly or even stated as a classroom norm. However, our experience is that these skills have to be specified in the syllabus at the beginning of the course, if not modeled and taught directly.

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taught directly.

Another feature of cooperative learning is face-to-face verbal problem solving, which holds advantages for both skilled and less skilled students. Good students benefit from serving as tutors to the other members of the group; less proficient students receive diagnostic and remedial help from their teammates. Much of this verbal interaction occurs immediately after directed teaching and allows students to elaborate on lecture material and to consolidate this information in long-term memory. Students who are reluctant to participate in large class discussions are often quite comfortable contributing to small group interactions.

Positive Outcomes

As noted previously, most of the research on cooperative learning has been conducted at the precollegiate level. For example, Johnson, Maruyama, Johnson, Nelson, and Skon (1981) and Slavin (1983) conducted major meta-analyses concerning the effect of cooperative learning on general academic achievement. In both analyses, cooperative learning produced large achievement gains when compared with more traditional teaching procedures. Slavin's report used only K-12 students, whereas Johnson et al. used primarily K-12 subjects but also included some collegiate and adult learners.

Although studies conducted on cooperative learning at the college level are limited in number, a few studies have produced significant achievement effects. For example, Frierson (1986) found that Black nursing students performed better on a state nursing exam when they studied cooperatively, as compared with similar students studying individually. Dansereau (1983) found that "Cooperative Learning was consistently more effective than individual learning" when students were required to remember information from a geology text. Treisman (1985) studied the effects of cooperative learning on Black students at Berkeley who entered college as math or science majors. He found that Black students participating in his cooperatively taught enrichment sessions received a mean grade average of 2.6 in freshman calculus, whereas a comparable group of Blacks not attending the workshops averaged 1.5. Five-year retention rates at Berkeley for Black workshop attendees was 65% and for Black nonattendees, 41% (the all-campus average is 66%). The percentage of Black workshop attendees graduating in mathematics-based majors was 44%, while the graduation rate was only 10% for the Black control group not attending the workshops.

Higher level thinking skills and second-language acquisition are other achievement measures that have been positively affected by cooperative teaching techniques (Johnson et al., 1981; Slavin, 1983). The most consistent positive findings for cooperative learning, however, have centered on affective or attitudinal change. Outcome measures such as racial/ethnic relations, sex difference relations, self-esteem,and other prosocial outcomes have all been documented in the cooperative learning research.

California State University Dominquez Hills Data

For the last four years, cooperative learning has been practiced at Dominquez Hills in a number of courses across the curriculum. Currently, a group of 15 to 20 faculty meet monthly to share data, troubleshoot procedures, and discuss other issues in cooperative learning. Many of these faculty have been gathering data on the effect of cooperative learning in their classes. The results are depicted in Table 1. At the end of each semester, students in cooperatively taught courses are asked to compare these classes with lecture and lecture-discussion courses they have taken during that semester or in the past. As shown in Table 1, the overwhelming majority of the students prefer cooperative learning. Outcome measures, such as higher level thinking skills, interest in subject matter, general class morale, and frequency/quality of interactions with classmates, receive particularly favorable ratings.

(INSERT TABLE ONE NEAR HERE)

Narrative comments also are solicited on the end-of-course student evaluations. Mastery/comprehension of subject matter is the most frequently cited advantage of cooperative learning when compared with more traditional forms of instruction. Quality of peer interaction, ability to understand different points of view, interest in and enjoyment of class, and increased inclination to attend class round out the most frequently stated advantages of cooperative learning.

The CSU Chancellor's Office has granted funds to study cooperative learning in an educational statistics class. Although the sample size is rather small as of this writing, some patterns are beginning to emerge. At the beginning of the semester, female students are more anxious and lower achieving than are their male counterparts. Similarly, Black students are lower achieving and more anxious than are Anglo students. Over the course of the semester, all students gained in achievement and reduced their anxiety levels concerning course content, but females and Blacks did so at differential rates when compared to male and Anglo students.

These data are consistent with precollegiate data on the effects of cooperative learning. That is, all students performed well when exposed to cooperative learning, but lower achievers, females, and minorities performed particularly well. If replicable, these "aptitude-treatment" interactions have particular importance as college instructors confront the diversity of student populations that characterize many of our nation's colleges. Whether cooperative learning is a main effect replicable with all types of students, or whether it interacts with student characteristics, it is clear that the technique is useful to teachers in a variety of disciplines and with many types of students.

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Implementing Cooperative Learning in Your Classroom

Based on using cooperative learning for over three years in classes at Dominquez Hills, and our observation of implementation of cooperative learning in a variety of precollegiate and collegiate classrooms, the following strategies and techniques appear to characterize successful implementation of cooperative learning at the college level.

(INSERT TABLE TWO NEAR HERE)

Structure and organization

Among the most important characteristics of effectively functioning cooperative learning groups are clearly structured team learning assignments and highly organized in-class implementation of those assignments. In pursuit of appropriate levels of structure and organization, some instructors go as far as specifying precise time limits for each element of the cooperative learning assignment. Students will stay on task during cooperative learning activities if the assignment instructions are clear and the learning activities are relevant to the course objectives. One way of insuring failure in cooperative learning is to give vague instructions to students concerning the assignment and the procedure for carrying out that assignment.

Assignments must require learning of material, not completion of task

If students perceive that they may fulfill team learning requirements simply by completing a worksheet or other assignment, there is little incentive for taking responsibility for their teammates. Thus instructions to the teams must indicate clearly that all team members are required to achieve mastery of the content of the assignment.

Some ways of accomplishing this interdependence are to quiz individual team members verbally concerning the content of the completed worksheet/assignment, to give a brief written quiz to each team member upon completion of the assignment, or to select one team member randomly to take a written quiz for the entire team. Another technique for insuring that team members will help one another during the cooperative learning activities is to give each team a group reward when individual members of the team increase scores on individually completed class tests or papers. Interdependence may also be fostered by a "jigsaw" procedure in which the team learning activity is structured such that different team members are responsible for learning and teaching different elements of the group learning assignment to their teammates.

Groups should be selected by the teacher, not the students

Our experience tells us that allowing students to select their own teammates produces excessive socializing and off-task behavior within groups. Random assignment to groups can produce one or more low-functioning teams, which may disrupt the learning of the class as a whole. Most experienced practitioners find that grouping the students heterogeneously based on achievement and any other factors of importance to the instructor (e.g., race, sex, age) results in the most productive cooperative learning experience. A critical mass of serious, task-oriented students must be present in each team to produce the highest level of constructive student involvement and on-task behavior.

Team building

If the instructor is planning to make a serious commitment to cooperative learning, team building should be among the first activities implemented to encourage group cohesiveness. At the start of the first cooperative learning session, 10 to 20 minutes should be devoted to having team members introduce themselves to one another. The senior author uses a written worksheet to help accomplish this activity. On the worksheet, he briefly describes his professional training and background as well as some of his favorite avocations. Then students are required to give similar information to teammates and are encouraged to exchange home phone numbers.

In-class versus out-of-class team learning

Our experience indicates that most team learning should take place during class time. It is difficult for the instructor to monitor out-of-class team learning. In the latter case, teams often have problems with off-task behavior, dominators and sandbaggers, and fulfilling only the nominal requirements of the assignments rather than mastering the knowledge implied in the tasks. Although use of class time for team learning decreases time available for lecture coverage of the material, we believe that mastery of the material covered increases very significantly. Slavin (1983) and others have found that using part of the class time for group learning produces higher levels of achievement when compared with more traditional direct instruction (lecture) techniques.

Group experiences

If cooperative learning activities are well planned, clearly organized, and obviously relevant to the course objectives, most students find team learning an enjoyable and highly involving activity. Occasionally a student, upon hearing about cooperative learning for the first time, will complain that he or she took the class to learn from the "expert," the instructor. Such a person often feels that group learning is essentially shared ignorance and resists working within a group structure. It is our observation that such students usually become enthusiastic participants in cooperative learning after trying at least two group learning activities.

Initiating cooperative learning

It is possible to use cooperative learning in more traditionally structured classes with a minimum of disruption to existing procedures and with a relatively small investment of instructor time. Professors might begin using cooperative learning simply by pausing after 15 to 20 minutes of lecture and asking pairs of students to reflect on the lecture material in ways suggested by the teacher (e.g., have students give real-world examples or ask questions that relate to the lecture). Teachers could also use cooperative learning during the class period prior to each exam. Teams of students could be given examination review materials and asked to reach team consensus concerning the answers. Once such simple techniques are implemented successfully, more sophisticated applications of cooperative learning can be developed.

Most college professors have received little or no instruction in pedagogy. As a result, they tend to teach students the way they were taught, using lecture and lecture-discussion methods. The purpose of this article is to present an alternative to these techniques, and an active learning strategy known as cooperative learning. Although the research on cooperative learning indicates that it is a powerful procedure for influencing student achievement and attitudes, the technique has not been implemented systematically in many college classrooms. The research at both the K-12 and collegiate levels and the work conducted at Dominquez Hills, indicates that appropriate implementation of cooperative learning techniques can increase students' involvement in learning, enjoyment of the learning process, and mastery of course content.

Authors' note: This article is based on a presentation made at the First Annual Lilly Conference on College Teaching-West, March 17-19, 1989, University of California Conference Center, Lake Arrowhead, California. Preparation of this article was supported in part by an Academic Program Improvement grant from California State University.

Cooper, J. L., & Mueck, R. (1990). Student involvement in learning: Cooperative learning and college instruction. Journal on Excellence in College Teaching, 1(1), 68-76. Reprinted with permission from the Journal of Excellence in College Teaching, Miami University, Oxford, OH 45056.

Table 1

Students Responding that Cooperative Learning was Significantly or Somewhat More Effective than Traditional College Instruction

	Cooperative Learning (Percent)		
Outcome	Significantly More Effective	Somewhat More Effective	Total
General academic achievement	37.3[a]	42.0[a]	79.3[a]
	54.3[b]	27.1[b]	81.4[b]
	32.5[c]	41.6[c]	74.1[c]
	32.5[d]	43.4[d]	75.9[d]
	23.3[e]	56.0[e]	79.3[e]
Higher-level thinking skills	38.2[a]	43.3[a]	81.5[a]
	47.1[b]	34.3[b]	81.4[b]
	32.2[c]	41.3[c]	73.5[c]
	37.2[d]	44.0[d]	81.2[d]
	28.8[e]	40.7[e]	69.5[e]
Interest in subject matter	50.0[a]	34.4[a]	84.4[a]
	57.1[b]	28.6[b]	85.7[b]
	44.8[c]	30.8[c]	75.6[c]
	40.2[d]	44.0[d]	84.2[d]
	34.7[e]	39.9[e]	74.6[e]
Likelihood of student attending class	47.8[a]	23.9[a]	71.7[a]
	40.6[b]	31.9[b]	72.5[b]
	44.8[c]	30.8[c]	75.6[c]
	45.9[d]	24.6[d]	70.5[d]
	23.7[e]	28.8[e]	52.5[e]
Frequency & quality of contact with instructor	44.6[a]	31.3[a]	75.9[a]
	52.9[b]	27.1[b]	80.0[b]
	32.5[c]	33.2[c]	65.7[c]
	32.5[d]	39.2[d]	71.7[d]
	19.5[e]	28.0[e]	47.5[e]
Time on task	41.3[a]	41.0[a]	82.3[a]
	48.6[b]	28.6[b]	77.2[b]
	36.4[c]	38.8[c]	75.2[c]
	36.4[d]	37.5[d]	73.9[d]
	26.3[e]	46.6[e]	72.9[e]
Ability to diagnose own knowledge of subject matter	33.3[a]	48.3[a]	81.6[a]
	44.3[b]	31.4[b]	75.7[b]
	36.7[c]	40.6[c]	77.3[c]
	32.8[d]	44.9[d]	77.7[d]
	19.7[e]	50.4[e]	70.1[e]

Frequency & quality of interactions with classmates	68.6[a]	25.9[a]	94.5[a]
	80.0[b]	11.4[b]	91.4[b]
	62.9[c]	25.2[c]	88.1[c]
	65.8[d]	27.1[d]	92.9[d]
	71.8[e]	23.9[e]	95.7[e]
Amount of class time require to reach mastery	35.4[a]	43.6[a]	79.0[a]
	53.6[b]	24.6[b]	78.2[b]
	30.4[c]	40.6[c]	71.0[c]
	30.8[d]	41.0[d]	71.8[d]
	19.7[e]	47.0[e]	66.7[e]
General class morale	56.5[a]	33.6[a]	90.1[a]
	54.3[b]	35.7[b]	90.0[b]
	42.0[c]	43.0[c]	85.0[c]
	47.0[d]	38.0[d]	85.0[d]
	41.9[e]	41.0[e]	82.9[e]
Rapport with teacher	49.3[a]	30.9[a]	80.2[a]
	49.3[b]	39.1[b]	88.4[b]
	36.4[c]	31.8[c]	68.2[c]
	37.9[d]	37.1[d]	75.0[d]
	17.0[e]	29.5[e]	46.5[e]

NOTE. Ratings based on 5-point Likert scale where 1 = "significantly more effective than traditional college instruction" and 5 = "significantly less effective than traditioinal college instruction."

a.Fall Semester 1988, 14 classes including clinical science, educational research methods and statistics. Spanish culture, sociolinguistics, French, reading methods, classroom management, and secondary methods, N=298.

b.Summer Term 1988, 12 classes including biology, educational research methods and statistics, statistical analysis in clinical science, teaching methods, Spanish culture, sociolinguistics, and Mexican-American studies (lower- and upper-division and graduate classes), N=70.

c.Spring Semester 1988, 12 classes including Spanish literature and sociolinguistics, education methods, educational research methods and statistics, and Mexican-American studies (lower- and upper-division and graduate classes), N=286.

d.Fall Semester 1987, 4 classes including teaching methods and graduate educational research methods and statistics, N=266.

e.Summer Term 1987, 4 classes including teaching methods and graduate educational research methods and statistics, N=118.

Table 2

IMPLEMENTING COOPERATIVE LEARNING TIPS

-- clearly structure team learning assignments

-- require students to learn material, not complete a task

-- group students heterogeneously based on achievement and other instructor identified factors

-- use team building activities to encourage group cohesiveness

-- use class time for team learning activities

-- initiate cooperative learning activities gradually
(CREATE BETTER TABLE LAYOUT)

Ed.'s note: As noted elsewhere in the sourcebook, interest in collaborative learning is growing, and it crosses disciplinary boundaries. This bibliography, organized by field, demonstrates that growing and wide-spread interest. Be sure to look at fields related to you own. Frequently the same article's slightly modified collaborative approach can be used in differe disciplines.

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SECTION B
Discipline-Specific Bibliography

Biology

Carlson, E. A. (1981). Biology for nonmajors. In A. W. Chickering (Ed.). *The modern american college*, (pp. 440-452). San Francisco: Jossey-Bass.

Miller, J. E., & Cheetham, R. D. (1990). Teaching freshmen to think--active learning in introductory biology. *BioScience*, *40*, 388-391.

Watson, Scott B. (1992). The essential elements of cooperative learning. *The American Biology Teacher*, *54*, 84-86.

Business and Management

Greenwald, B. (1991). Teaching technical material. In C. R. Christensen, D. A. Garvin, & A. Sweet (Eds.), *Education for Judgment: The artistry of discussion leadership*, (pp. 193-213). Boston: Harvard Business School Press.

About case discussions in subjects like economics, finance, statistics, and decision analysis. Two main sections--structuring individual case discussions, and managing technical case discussion--contain helpful tips.

Michaelsen, L. K. (Ed.). (1984-85). Using groups in teaching. [Special Issue] *The Organizational Behavior Teaching Review*, *9*(4).

Michaelsen, L. K., Watson, W. E., & Shrader, C. B. (1984-85). Informative testing--a practical approach for tutoring with groups. *The Organizational Behavior Teaching Review*, *9*(4), 18-33.

Paget, N. (1988). Using case methods effectively. *Journal of Education for Business*, *63*, 175-180.

Schroeder, H., & Ebert, D. G. (1983). Debates as a business and society teaching technique. *Journal of Business Education*, *58*, 266-269.

Engineering

Newell, Sigrin. (1990). Collaborative learning in engineering design. *The Journal of College Science Teaching*, *19*, 359-362.

Newell describes a special type of collaborative learning in which senior undergraduates work in teams of three to develop special machines and devices to enable children and adults with cerebral palsy to lead more independent lives.

Smith, K. A. (1984, February). Structured controversies. *Engineering Education*, pp. 306-309.

This is a brief article outlining the use of structured controversy within a cooperative learning context. The main focus is on collegiate engineering courses, but applications can be made across many disciplines.

Smith, K. A., Johnson, D. W., & Johnson, R. T. (1981, December). Structuring learning goals to meet the goals of engineering education. *Engineering Education*, pp. 221-226.

Smith, K. A., & Starfield, A. M. (1988). Open-ended problem solving via punctuated dialogue. *Frontiers in Education Conference Proceedings*, 1-10. Washington, D.C.: IEEE/ASEE.

Wales, C. E. (1979). Does how you teach make a difference? *Engineering Education*, 394-398.

Wales, C. E., Nardi, A. H., & Stager, R. A. (1988). Do your students think or do they memorize? *Engineering Education*, 682-688.

Describes Guided Design, a teaching strategy that requires students to combine critical thinking, creative thinking, and decision-making skills while solving problems in an engineering curriculum. Emphasis is on providing students with complex open-ended questions and forming groups to generate answers.

Geography

Cloke, P. (1987). ed rural geography and planning: A simple gaming technique Journal of Geography in Higher Education, *11*(1), 35-45.

Health

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Lynch, B. L. (1984). Cooperative learning in interdisciplinary education for the allied health professionals. Journal of Allied Health, 13, 83-93.

McEnerney, K. (1989). Cooperative learning as a strategy in clinical laboratory science education. Clinical Laboratory Science, 2(2), 88-89.

History

Steffens, H. (1988). Collaborative learning in a history seminar. The History Teacher, 21(10), 1-14.

A detailed description of the use of in-class seminar discussions and peer review of writing in a seventeenth-century intellectual history course (includes syllabus). Steffens also describes informal focused writing techniques and the use of journals, both designed to get students thinking and asking questions about the topic. Steffens shares the weekly progress of the class and excerpts of student feedback about the course. A good article for professors in almost any humanities discipline because it gives a good picture of what collaborative learning in a classroom looks like.

Language and Writing

Bennett, R. (1987, March). Cooperative learning with a computer in a Native language class. Paper presented at the Association of California State University Professors' Conference on the Use of Personal Computers in Higher Education: Excellence in Education, San Diego, CA. (ERIC Document Reproduction Service No. ED 320 709)

Bishop, W. (1986). Helping peer writing groups succeed. Teaching English in the Two Year College, 15, 120-125.

Bosley, D. S., Morgan, M., Allen, N. (1990). An essential bibliography on collaborative writing. Bulletin of the Association for Business Communication, 53(2), 27-33.

Brown, S. C. (1986, October). More than an exercise: Annotated bibliography as collaborative learning. Paper presented at the Annual Meeting of the Arizona English Teachers Association, Scottsdale, AZ. (ERIC Document Reproduction Service No. ED 278 018)

Bruffee, K. (1992). A short course in writing (4th Ed.). New York: Harper/Collins.

Butler, S., & Bentley, R. (1988, October). Writing as a collaborative activity: Lessons from the lifewriting class. Paper presented at the Annual Meeting of the British Columbia Teachers of English, Vancouver, British Columbia, Canada. (ERIC Document Reproduction Service No. ED 316 863)

DiCiccio, A. C. (1988, March). Social constructionism and collaborative learning: Recommendations for teaching writing. Paper presented at the Annual Meeting of the Conference of College Composition and Communication, Atlanta, GA. (ERIC Document Reproduction Service No. ED 294 201)

Fiore, K., & Elsasser, N. (1982). Strangers no more: A liberatory literacy curriculum. College English, 44, 115-128.

An article for those teaching writing to underprepared adult students. Describes at length a semester spent teaching writing to women by using Lev Vygotsky's ideas on social discourse and Paulo Freire's "generative themes" drawn from the students' personal experiences. Excerpts of students' writing provide excellent illustration of their progressive phases of writing.

Fraser, C. C. (1988). Teaching language and culture with a student collaborator. Die Unterrichtspraxis/Teaching German, 21(1), 109-112.

Gere, A. R. (1987). Writing in groups: History, theory, and implications. Carbondale, IL: Southern Illinois University Press.

Haring-Smith, T. (Ed.) (1984). A guide to writing programs: Writing centers, writing across the curriculum and peer tutoring programs. Glenview, IL: Scott, Foresman.

Held, G.,& Rosenberg, W. (1983). Student-faculty collaboration in teaching college writing. College English, 45, 817-823.

Descriptive article about Queen's College (City University of New York) student-faculty team teaching program, where upperclass students team-teach writing on a 1:1 basis with professors. Discusses dynamics of team-teaching, sharing authority, division of labor, and benefits of the program for students and professors.

Henschen, B. M. & Sidlow, E. I. (1990). Collaborative writing. College Teaching, 38(1), 29-32.

Kail, H. (1983). Collaborative learning in context: The problem with peer tutoring. College English, 45, 594-599.

The "problem with peer tutoring," as Kail explains, is the convoluted web of authority and pedagogy that results when peer tutors are added to the student-faculty relationship. He

raises questions like: Who trains the tutors? How much teaching should tutors perform? Are peer tutoring centers truly collaborative (i.e. do tutors and teachers work together to help other students)? A good article for faculty or administrators who have or are creating peer tutoring/writing centers.

Koeppel, M. S. (1989). *Writing: Resources for conferencing and collaboration*. New York: Prentice-Hall.

Ney, J. W. (1989). *Teacher-student cooperative learning in the freshman writing course*. (ERIC Document Reproduction Service No. ED 312 659)

Ney, J. W. (1989). *Teaching English grammar using collaborative learning in university courses*. (ERIC Document Reproduction Service No. ED 311 463)

Radebaugh, M. R., & Kazemek, F. E. (1989). Cooperative learning in college reading and study skills classes. *Journal of Reading*, *32*, 414-418.

Rasinski, T. V. (1989). The case method approach in reading education. *Reading Horizons*, 30(1), 5-14.

Reither, J. A. (1987, March). *What do we mean by collaborative writing (and what difference will it make)?* Paper presented at the Annual Meeting of the Conference on College Composition and Communication, Atlanta, GA. (ERIC Document Reproduction Service No. ED 280 084)

Mathematics

Artzt, A. F., & Newman, C. M. (1990). Cooperative learning. *Mathematics Teacher*, *83*, 448-453.

Artzt and Newman focus primarily on middle school examples of cooperative learning, but they also provide valuable information for higher education instructors.

Borresen, C. R. (1990). Success in introductory statistics with small groups. *College Teaching*, *38*(1), 26-28.

Davidson, N., & Kroll, D. L. (1991). An overview of research on cooperative learning related to mathematics. *Journal for Research in Mathematics Education*, *22*, 362-365.

Davidson and Kroll present an overview of the literature regarding cooperative learning and the evidence collected that describes the benefits and effects of cooperative learning.

Davidson, N., Weissglass, J., & Roberson, L. (1990). Staff development for cooperative learning in mathematics. *Journal of Staff Development*, *11*(3), 12-17.

Dees, R. L. (1991). The role of cooperative learning in increasing problem-solving ability in a college remedial course. *Journal for Research in Mathematics Education*, *22*, 409-421.

After researching the qualities of cooperative learning, Dees found that when students were encouraged to work together, their grades improved.

Romer, K. T. (1991). Mediators in the teaching and learning chain: Selected undergraduates support the initial teaching experience of the graduate teaching assistant. In J. D. Nyquist, R. D. Abbott, D. H. Wulff, J. Sprague. (Eds.), *Preparing the professoriate of tomorrow to teach: Selected readings in TA training* (pp. 331-337). Dubuque, IA: Kendall Hunt.

Describes a program whereby undergraduate mediators are paired with graduate TAs in math recitation sections to provide feedback regarding the TA's performance. International TAs reported helpful feedback regarding difficulties with language, and all TAs reported helpful feedback regarding the undergraduate point of view.

Treisman, U. (1985). A study of mathematics performance of black students at the University of California, Berkeley (\doctoral dissertation University of California, Berkeley, 1986) *Dissertation Abstracts International*, *47*, 1641-A.

Treisman, U., & Fullilove, R. E. (1990). Mathematics achievement among African American undergraduates at the University of California, Berkeley: An evaluation of the mathematics workshop program. *Journal of Negro Education*, *59*, 463-478.

White, A. M. (1985). Teaching math as though students mattered. In *Teaching as Though Students Mattered* (pp. 39-58). J. Katz (Ed.) New Directions for Teaching and Learning, No. 21. San Francisco: Jossey-Bass.

Enthusiastic but general description of White's experiments at teaching mathematics. He mentions Carl Rogers as an influence on his "student-centered" instruction, and "emphasizes questions over answers" for his students. This article may give math professors a flavor for an alternative way of teaching, but detailed how-to's are lacking.

Philosophy

Glidden, J., & Kurfiss, J. G. (1990). Small-group discussion in Philosophy 101. *College Teaching*, *38*(1), 3-8.

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Kasulis, T. P. (1991 July 31). Learning philosophy as Plato did--not by reading but by conversing. *The Chronicle of Higher Education*, p. A32.

Describes a philosophy seminar that uses student's experiences, not textbooks, as the basis for discussion and exploration of philosophical questions.

Psychology

Brooks, C. I. (1985). A role-playing exercise for the history of psychology course. *Teaching of Psychology*, *12*, 84-85.

Madigan, R. & Brosamer, J. (1990). Improving the writing skills of students in introductory psychology. *Teaching of Psychology*, *17*, 27-30.

Moeller, T. G. (1985). Using classroom debates in teaching developmental psychology. *Teaching of Psychology*, *12*, 207-209.

Science

Bedient, D., Garoian, G. S., & Englert, D. C. (1984). Self-instructional materials for underprepared science students. *Improving College and University Teaching*, *32*, 128-134.

Hassard, J. (1990). *Science experiences: Cooperative learning and the teaching of science*. Menlo Park, CA: Addison-Wesley.

McEnerney, K. (1989). Cooperative learning as a strategy in clinical laboratory science education. *Clinical Laboratory Science*, *2*(2), 88-89.

McEnerney stresses the importance of cooperative learning for improving basic communication and problem-solving skills.

Smith, M. E. Hickey, C. C., & Volk, G. L. (1991). Cooperative learning in the undergraduate laboratory. *Journal of Chemical Education*. 68(5), pp. 413-415.

Wheatley, J. (1986). The use of case studies in the science classroom. *Journal of College Science Teaching*, *15*, 428-431.

Woods, D. R. (1991). Three more approaches to problem solving. *Journal of College Teaching*, *11*(1) 48-52.

Woods summarizes various approaches to problem solving with at least two emphasizing collaborative and group learning. These approaches stress students as active participants in education and teachers as helpful facilitators not lecturers.

Sociology

Day, S. (1989). Producing better writers in sociology classes: A test of the writing-across-the-curriculum approach. Teaching Sociology, 17, 458-464.

Gamson, W. A. (Ed.). Learning group exercises for political sociology. A project of the Political Sociology Section of the American Sociological Association. Available from ASA Teaching Resources Center, 1722 N. Street N.W., Washington, D.C. 20036-2981. Phone: (202) 833-3410.

A compilation of background information about learning groups and 10 exercises to use with learning groups. Each exercise is complete with an objective, suggested readings, structured tasks for group work, and debriefing discussion ideas. The exercises are specifically geared to political sociology, but may be adaptable to classes with similar content. (Note: the ASA Teaching Resources Center is a great resource for other sociology teaching materials.)

Teacher Education

Prescott, S. (1989-90). Teachers' perceptions of factors that affect successful implementation of cooperative learning. Action in Teacher Education, 11(4), 30-34.

Reynolds, C. & Salend, S. J. (1989). Cooperative learning in special education teacher preparation programs. Teacher Education and Special Education, 12(3), 91-95.

Rice, D. C. & Gabel, D. L. (1990). Cooperative learning in a college science course for preservice elementary teachers. (ERIC Document Reproduction Service No. ED 320 773)

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Ed.'s note: This annotated bibliography includes a variety of published materials with information relevant to collaborative and cooperative learning. The annotations summarize the works and direct you to particularly useful parts of them. Additionally, many of the annotations directly announce why we included the work in this bibliography.

SECTION B
Annotated Bibliography

Agatucci, C. (1989, March). Empowering students through collaborative learning strategies. Paper presented at the Annual Meeting of the Conference on College Composition and Communication, (Seattle, WA. March 16-18, 1989). (ERIC Document Reproduction Service No. ED 303 807)

Combining literature with personal experience, Agatucci writes about using collaborative learning with first-year, culturally diverse students to integrate them successfully into academic culture. In the first half of the paper, Agatucci elaborates on her pedagogical assumptions using much jargon and few examples. In the second half of the paper, she describes students in cultural geography classes doing field work in their own neighborhoods and mentions students in writing classes using peer response or critique groups. Also mentioned are two one-credit classes to help students with their social adjustment to college and their study skills.

Benne, K. et al. (1975). The laboratory method of changing and learning. Palo Alto, CA: Science and Behavior Books.

A useful guide for lab or experimental group work. Includes history, major concepts, and explanations of how these methods apply in the areas of personal growth, organizational development, and community development.

Benne, K. (1984). The planning of change (4th Ed.). New York: Holt, Rinehart and Winston.

Deals conceptually and strategically with "social change". May be useful for people working with implementing collaborative learning strategies on an organizational level.

Billson, J. M. (1986). The college classroom as a small group: Some implications for teaching and learning. Teaching Sociology, 14, 143-151.

Literature concerning group processes and group development are reviewed to create the foundation for an in-depth discussion of the subject. Includes 15 principles of effective implementation of collaborative learning techniques in the classroom.

Bonwell, C. C & Eison, J. A. (1991). Active learning: Creating citement in the classroom (ASHE-ERIC Higher Education Report No. 1). Washington, DC: The George Washington University, School of Education and Human Development.

Bonwell and Eison discuss the advantages of active learning in the classroom and review a variety of options as alternatives to the traditional lecture method such as the use of questions and discussions; debates, role-playing, simulations, and games; and peer teaching. They present modifications to lectures and discuss obstacles to the use of active learning. Essentially an in-depth literature review.

Bosworth, K., Schilz, C., & Flannery, J. (1991). Case studies of collaborative learning in college classrooms. (Available from: Center for Adolescent Studies, Indiana University, Bloomington, IN 47405)

The authors collected 20 case studies of collaborative learning among a variety of disciplines (math, science, management, writing, communications, history, geology, drama). The publication provides abstracts of the cases and includes contact names and institutions for further information.

Cartwright, D., & Zander, A. (1968). Group dynamics. New York: Harper and Row.

A "classic" book of research about issues of group functioning such as power relations, group cohesion, and productivity. Focuses more on work groups than educational groups.

Christensen, C. R., Garvin, D. A. & Sweet, A. (Eds.). (1991). Education for judgment: The artistry of discussion leadership. Boston: Harvard Business School Press.

A volume of essays revolving around different features of using "discussion teaching." Some authors share their personal experiences with it; others write about skills related to discussion teaching--listening, questioning, observing, reflecting. Included is a chapter on "Teaching Technical Material" by Bruce Greenwald that refers to finance, statistics, and economics. C. Roland Christensen's chapter "Every Student Teaches and Every Teacher Learns: The Reciprocal Gift of Discussion Teaching, gets to the heart of a student-centered, active-learning classroom process.

Christensen, C. R.,& Hansen, A. J. (1987). Teaching and the case method: Text, cases, and readings. Boston: Harvard Business School Press.

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Recommended by some to be the most comprehensive book available on the case study method. Includes notes on case teaching, learning, classroom discussion,and many cases on classroom teaching problems and processes.

Finkel, D. L., & Monk, G. S. (1979). The design of intellectual experience. The Journal of Experiential Education, 31-38.

Although not couched in traditional collaborative learning terminology (they use "workshops" rather than "small group work"), Finkel and Monk give a detailed example of an intentionally structured classroom learning experience. They lay out six principles for designing group work which involve the classroom environment, the activity itself, and the role of the teacher. They also give examples of group work in the areas of calculus, chemistry, philosophy, psychology, social science, and humanities.

Frederick, P. (1981). The dreaded discussion: Ten ways to start. Improving College and University Teaching, 29(3), 109-114.

Practical tips for beginning discussions in college classrooms. Useful for all professors--novice through experienced--in the humanities and social sciences. Natural science professors may be able to use these tips with slight modifications.

Gebhardt, R. (1980). Teamwork and feedback: Broadening the base of collaborative writing. College English, 42(1), 69-74.

Gebhardt calls for the use of peer feedback early in the process of writing, not just during editing. Locating promising topics, generating details, developing a sense of audience, and clarifying the focus can all be fostered by peer feedback. The article also emphasizes the emotional benefits of collaboration, namely, ameliorating a sense of loneliness during writing and confronting fears of writing.

Hanson, P. G. (1981). Learning through groups: A trainer's basic guide. San Diego, CA: University Associates.

This is a practical guide for learning how to become a group facilitator. Group learning techniques are thoroughly described. It provides a well thought out overview of cooperative learning from the standpoint of a human relations trainer.

Hill, P. J. (1982). Communities of learners: Curriculum as the infrastructure of academic communities. In J. W. Hall & B. L. Kevles (Eds.), In opposition to core curriculum: Alternate models for undergraduate education (pp. 107-134). Westport, CT: Greenwood Press.

Describes in detail the creation and implementation of Federated Learning Communities at SUNY Stony Brook. Sections focus on program features such as the program seminar, the Master Learner and Mumford Fellow, and the core course. Hill also shares positive and negative feedback from students and professors.

Johnson, D. W., Johnson, R. T., & Smith, K. A. (1992). *Cooperative learning: Increasing college faculty instructional productivity*. (ASHE-ERIC Higher Education Report No.4) Washington, DC: The George Washington University's School of Education and Human Development.

This is probably the best book to date on cooperative learning at the college level. It integrates most of the previous writing by Johnson, Johnson, and Smith, and does so in a detailed, readable manner. Chapters elaborate on the basic elements of cooperative learning; research on cooperative learning; the instructor's role, including specific instructions for using different strategies; and cooperation among faculty. All strategies discussed pertain to the level of the individual classroom, with the exception of the chapter on base groups. Base groups are defined as "long-term, heterogenous, cooperative learning groups with stable membership whose primary responsibilities are to provide support, encouragement, and assistance in completing assignments and hold each other accountable for striving to learn" (p. 72). Suggesting that base groups may meet for the duration of a semester or an entire college career, the authors place particular emphasis on the development of personal, long-term, caring relationships among members of the group.

Johnson, D. W., Johnson, R. T., & Holubec, E. (1986). *Circles of learning: Cooperation in the classroom*. Edina, MN: Interaction Books.

This book focuses on the principles and strategies needed for creating effective cooperative learning groups.

Kraft, R. G. (1985). Group-inquiry turns passive students active. *College Teaching*, *33*(4), 149-154.

Describes the process of using "problems" or questions as vehicles for student writing and discussion. A "how-to" article that incorporates the author's thoughts on how group-inquiry meets the goals of education and the principles of learning.

Lindblad, J. (Summer, 1987). Collaborative inquiry: The social context of learning. *The National Report*.

Lindblad describes how she uses collaborative learning in her English classes. The detailed description focuses not on the particulars of English or writing, but on the dynamics of involving students in class discussions and prepared exercises. As such, her example could be applied easily to other areas.

McDade, S. A. (1988). *An introduction to the case study method: Preparation, analysis, and participation*. Cambridge, MA: The President and Fellows of Harvard College. (Available from: The Institute for Educational Management, Harvard Graduate School of Education, Guttman Library, Appion Way, Cambridge, MA 02138)

This brief article ("note") outlines basic steps for preparation of and participation in a case study. Very practical.

McKeachie, W. (1986). *Teaching tips: A guidebook for the beginning college teacher*. Boston: D. C. Heath.

A practical volume with a variety of teaching strategies. Especially useful chapters include: Chapter 4, "Organizing Effective Discussions; Chapter 5, "Student-Centered Discussion Methods; Chapter 17, "Instructional Games, Simulations, and the Case Method; and Chapter 18, "Role Playing and Microteaching."

Michaelsen, L. K., Cragin, J. P., & Watson, W. E. (1981). Grading and anxiety: A strategy for coping. *Exchange: The Organizational Behavior Teaching Journal*, *6*(1), 32-36.

Step-by-step description of "Setting Grade Weights" exercise, whereby student groups arrive at consensus about the distribution of course grades across individual performance, group performance, and peer evaluation. Students gain clear expectations and commitment to the grading procedures, as well as a jump on building group cohesiveness. Written for an organizational behavior course but applicable across disciplines.

Millis, B. J. (1991). Fulfilling the promise of the "Seven Principles" through cooperative learning: An action agenda for the university classroom. *Journal on Excellence in College Teaching*, *2*.

A practical article which juxtaposes Chickering and Gamson's "Seven Principles of Good Practice in Undergraduate Education" with different cooperative learning activities. Describes four cooperative learning activities: think-pair-share, send-a-problem, jigsaw, and round-table. These activities are appropriate for an individual class dealing with almost any subject matter.

Rau, W., & Heyl, B. S. (1990). Humanizing the college classroom: Collaborative learning and social organization among students. *Teaching Sociology*, *18*, 141-155.

After reviewing the "intellectual heritage" of the human relations movement as it relates to classroom social organization, Rau and Heyl provide solid information on the use and management of collaborative learning groups. They provide detailed information about the tasks and roles expected of their undergraduate sociology students, including examples of procedures and questions for group discussions. Excerpts from open-ended student course evaluations offer additional information about the pros and cons of the students' experiences. A persuasive article for using collaborative learning groups.

Schomberg, S. F. (Ed.). (1986). *Strategies for active teaching and learning in university classrooms*. Minneapolis, MN: University of Minnesota Press.

A handbook of articles by individuals at the University of Minnesota. Includes information about using cooperative learning groups, simulation and role play, structured controversy, training TAs to use active-learning strategies, and the use of personal computers in problem solving. Look for this handbook in a library or from a colleague, as it is out of print.

Smith, B. L. (1991). Taking structure seriously: The learning community model. *Liberal Education*, *77*(2), 42-48.

Although the title is singular, Smith describes four different learning community models: linked courses, clusters, freshman interest groups, and coordinated studies. She also describes why and how they work, in terms of benefits for students, faculty, and higher education institutions in general.

Wales, C. E. & Nardl, A. (1982, November). Teaching decision-making with guided design. Idea Paper No. 9. Morgantown, WV: West Virginia University, The Center for Guided Design.

Guided design is described as systematic method to teach decision-making skills. "Course activities are organized around the solution of a series of open-ended problems. Each problem [illegible]signed so that the students must apply the subject mat[illegible] are learning in the course in order to arrive at a solution." (1) Applicable for any problem-solving type of exercise. (See also Charles Wales, West Virginia University, in Section D of this sourcebook.)

Whitman, N. A. (1988). *Peer teaching: To teach is to learn twice*. (ASHE-ERIC Higher Education Report No. 4). Washington, DC: Association for the Study of Higher Education.

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This volume is packed with information about a variety of types of peer teaching: teaching assistants, tutors, counselors, partnerships, and work groups. Whitman also includes valuable sections on "strategies for academic planners" (how to develop and start a peer teaching program at the institution level) and "how the classroom teacher can implement peer teaching." Useful information for any discipline.

Ed.'s note: This bibliography includes references cited in the articles in section B. It also lists additional sources which address issues related to implementing collaborative and cooperative learning.

SECTION B
General Bibliography

Abercrombie, M. L. (1974). Aims and techniques of group teaching. London: Society for Research into Higher Education.

Auvine, B., Extrom, Poole, & Shanklin. (1978). A Manual for Group Facilitators. (Available from the Center for Conflict Resolution, 731 State Street, Madison, WI 53703)

Bohlmeyer, E. M., & Burke, J. P. (1987). Selecting cooperative learning techniques: A consultant strategy guide. School Psychology Review, 16, 36-49.

Brown, R. (1965). Social psychology. New York: Free Press.

Bruffee, L. K. (1987). The art of collaborative learning: Making the most of knowledgeable peers. Change, 19(2), 42-47.

Castelucci, M. F.,& Miller, P. (1986). Practicing collaborative learning. New York: CUNY College of Staten Island Press.

Chickering, A.,& Gamson, Z. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, 3, 2-6. (ERIC Document Reproduction Service No. ED 282 491)

Cohen, E. J. (1986). Designing groupwork: strategies for the heterogeneous classroom. New York: Teachers College Press.

Collier, G. (Ed.), (1983). The Management of peer-group learning: Syndicate methods in higher education. Guilford, Surrey: Society for Research into Higher Education.

Cooper, J. L., Prescott, S., Cook, L., Smith, L., Mueck, R., & Cuseo, J. (1990). Cooperative learning and college instruction: Effective use of student learning teams. Long Beach, CA: Institute of Teaching and Learning.

Dansereau, D. F. (1983). Cooperative learning: Impact on acquisition of knowledge and skills. (Report No. 341). Abilene, TX: U.S. Army Research Institute for the Behavioral and Social Sciences. (ERIC Document Reproduction Service No. ED 243 088)

Finkel, D. L., & Monk, G. S. (1978). Contexts for learning: A teacher's guide to the design of intellectual experience. Olympia, WA: Evergreen State College Press.

Finkel, D. L., & Monk, G. S. (1979). The design of intellectual experience. *Journal of Experiential Education*, *38*, 31-38.

Frierson, H. (1986). Two intervention methods: Effects on groups of predominantly black nursing students' board scores. *Journal of Research and Development in Education*, *19*, 18-23

Johnson, D.W., Maruyama, G., Johnson, R.T., Nelson, D., & Skon, L. (1981). Effect of cooperative, competitive, and individualistic goal structures on achievement: A meta-analysis. *Psychological Bulletin*, *89*, 47-62.

Huse, E. F., & Bowditch, J. L. (1977). *Behavior in organizations: A systems approach to managing*. (2nd ed.). Reading, MA: Addison-Wesley.

Larson, C. O., & Dansereau, D. F. (1986). Cooperative learning in dyads. *Journal of Reading*, *29*, 415-420.

Long, G. A. (1989). Cooperative learning: A new approach. *Journal of Agricultural Education*, *30*(2), 2-9.

Lyons, V. (Ed. (1980). *Structuring cooperative learning experiences in the classroom: The 1980 handbook*. Minneapolis, MN: Cooperative Network Publication.

Michaelsen, L. K., Cragin, J. P., & Watson, W. E. (1981). Grading anxiety: A strategy for coping. *Exchange: The Organizational Behavior Teaching Journal*, *6*(1), 8-14.

Romer, K. T. (1985). *CUE: Models of collaboration in undergraduate education*. Providence, RI: Brown University Press.

Roy, P. (Ed.). (1982). *Structuring cooperative learning experiences in the classroom: The 1982 handbook*. Minneapolis, MN: Interaction Books.

Sherman, L. W. (1990, July). *A cooperative pedagogical strategy for teaching developmental theories through writing: Dyadic confrontations*. Paper presented at the International Convention on Cooperative Learning, Baltimore, MD. (ERIC Document Reproduction Service No. ED 321 721)

Slater, P. (1966). *Microcosm: Structural, psychological, and religious evolution in groups*. New York: Wiley.

Slavin, R. E. (1983). When does cooperative learning increase student achievement? *Psychological Bulletin*, *94*, 429-445.

Treisman, U. (1985). A study of the mathematics performance of black students at the University of California, Berkeley (Doctoral dissertation, University of California, Berkeley, 1986). *Dissertation Abstracts International*, *47*, 1641A.

SECTION C
ASSESSING THE EFFECTS OF COLLABORATIVE LEARNING

This section provides a sample of the current research on the effects of collaborative learning. Research on this topic has been plentiful at the elementary and secondary school level and scarce at the college level. Nevertheless, the combination of studies done on cooperative and collaborative learning indicates that these types of learning are more successful than traditional types across a variety of measures. Not only do students report that they prefer collaborative types of instruction and that they gain a greater interest in education in general, but studies indicate that levels of achievement are higher for students who engage in collaborative learning. In addition, faculty members who use this style of instruction report a renewed sense of enjoyment in teaching, a greater degree of communication with their peers (if engaged in interdisciplinary instruction), and more positive student evaluations.

The reprinted articles chosen for this section look at two very different sides of the question of effects. Harvey Wiener's article, "Collaborative Learning in the Classroom: A Guide to Evaluation," may be particularly helpful for administrators or teachers who are evaluating teachers in the classroom. He describes the various roles a teacher in a collaborative setting may play as a way of answering his central question: "How do we assess the effectiveness of collaborative teaching models in the classroom?" Many teachers also have found the article useful as a way of improving their own practice.

Robert Slavin's article, "Research on Cooperative Learning: Consensus and Controversy," primarily looks at student achievement as a way of measuring the effectiveness of collaborative or cooperative learning. Although he uses the terminology of cooperative learning and cites most of his research from elementary and secondary school levels, this just serves to reinforce the need for additional research to be done at the higher education level. Looking at the effects of collaborative or cooperative learning in elementary and secondary schools can be useful to those of us in higher education as an indication of possible areas to focus on in terms of effects. Finally, we encourage you to take note of the new monograph, Cooperative Learning: Increasing College Faculty Instructional Productivity, by David Johnson, Roger Johnson, and Karl Smith (annotated in this and the previous section). It contains the most up-to-date and comprehensive information on a range of issues and research relating to the assessment and effects of cooperative and collaborative learning.

Not included in this section are two on-going assessments of collaborative/cooperative learning that promise to shed important new light on the effects of these strategies on student attainment. One study, being conducted by Vincent Tinto, Anne

Goodsell, and Pat Russo of Syracuse University, is part of the broader research agenda of the National Center for Postsecondary Teaching, Learning, and Assessment. The first phase of this study looks into the impacts of collaborative learning on learning and persistence in a public university and urban community college in Washington state. Combining both longitudinal survey data and qualitative focus group and interview data, the study seeks to understand how participation in collaborative learning environments alters student behavior and subsequent attainment in higher education.

Another study, funded by the Fund for the Improvement of Postsecondary Education, is currently being carried out by James Cooper at California State University, Dominquez Hills. His study seeks to document the effects of cooperative learning strategies on a variety of student outcomes across a range of different subject areas. These include the development of cognitive skills, affective and attitudinal changes, changes in student developmental levels, and student persistence.

The bibliographies for this section list some promising studies that discuss assessing the effects of collaborative and cooperative learning in higher education. Many people are advocating the use of collaborative techniques to assess collaborative learning strategies--techniques which involve a continuing conversation between those doing the assessment (administrators, professors, researchers) and those being assessed (fellow professors and students) (Hunter, 1991; Smith & MacGregor, 1991). Qualitative research methods point the way toward a grounded basis for understanding collaborative learning; indeed, qualitative research is a collaborative endeavor between people seeking to understand a practice such as collaborative learning from a holistic point of view. In keeping with a holistic, grounded base for assessment of effects, some studies listed in the bibliographies look beyond measures of student achievement to cross-ethnic relations and the role of gender in education.

NOTE: All of the citations for these articles appear in the General Bibliography at the end of section C.

Ed.'s note: Wiener writes practically about assessing the success of collaborative learning. He defines the several roles an instructor must perform in a collaborative learning environment, and he urges teachers to establish the standards for evaluating collaborative learning. Although the article was originally intended for English teachers, the advice Wiener gives is relevant to the assessment of collaborative learning across fields.

COLLABORATIVE LEARNING IN THE CLASSROOM: A GUIDE TO EVALUATION

Harvey S. Wiener

Over the last decade, collaborative learning has become an important method for college English teachers, who now realize that their own education rarely taught them how colleagues work together to learn and to make meaning in a discipline, and who have rejected philosophically the kinds of approaches to teaching that isolate learners instead of drawing them together. In addition, the problems for education in the seventies and eighties--the changes in student populations, the growth in the number of nontraditional learners in the collegiate body, the alienating nature of learning in large classrooms with too many students, the acknowledged decline of freshmen entry-level skills in reading, writing, speaking, listening, and thinking--these and other challenges to an earlier educational paradigm have shaken our faith in conventional teaching strategies and have called to question our obsession with the major metaphor for learning over the last three hundred years, "the human mind as the Mirror of Nature."

Ken Bruffee (1984) rejects this metaphor and instead chooses to see knowledge dependant on social relations, not on reflections of reality. (See Bruffee pp.XXX. All references to Bruffee's 1984 article will include the pagination found in this sourcebook.) Knowledge is "a collaborative artifact" (p. 103) that results from "intellectual negotiations" (p. 107). Bruffee explores the curricular implications of knowledge collaboratively generated, always with one eye on the classroom and the other on the philosophical underpinnings of the new paradigm.

But Bruffee's model, built on the delicate and necessary tension between theory and practice, may not, I suspect, have guided much of what teachers are calling collaborative learning today. I mention this suspicion out of my recent investigations into the issue of assessment generally as a force in postsecondary education and also out of my recent frustration as formal observer of classroom teaching performances in a university-mandated system of evaluation for promotion, retention, and tenure. I realized as I watched these attempts at instruction through collaboration that to apply to the new paradigm the standards we had in classroom observation checklists had little relation to the classroom activities I observed. What was worse, I realized that we had not established either as an institution or as a profession any standards for judging our attempts to implement the evolving concept of teaching and learning as a social act. Hence the question I intend to address in this essay: How do we assess the effectiveness of collaborative teaching models in the classroom?

Asking this question on evaluation now, as collaborative learning grows more and more popular, is to seize an advantage we have missed many times before. Formal assessment has always been the stepchild of the profession. In the past we have given up important evaluation activities for certifying the success of our students as learners and of ourselves as teachers. Professional testing agencies, for example, not classroom teachers, develop and oversee college entrance tests for graduates and undergraduates. Despite the obligatory committees of teachers and researchers who are invited to establish standards in general terms and to highlight areas of learning, professional test writers are the ones who produce specifications on most commercially prepared large-scale examinations.

Worse still, legislatures, seeing a void, have leaped in to define competencies we have not. In many states, legislatures, not teachers, have mandated and overseen the development of tests for college writers. The Florida Department of Education, for example, has created the College Level Academic Skills Test (an essay and an objective test) for all students in the state and has prescribed the number of pages to be written each week in writing classes. Georgia has a similar test in progress.

Even current measures for judging a teacher's classroom effectiveness have been influenced insufficiently by the teachers themselves who are being judged. Administrative committees, education school faculty, and evaluation specialists often develop the standards for classroom observations and create atomistic, overly-generalized checklists for use in assessing teaching. Or, institutions develop no standards whatsoever, and classroom observation is an exercise in a senior professor's effort to characterize someone else's teaching by means of some vague, unarticulated, and as yet socially unjustified vision of perfection. Even useful efforts by the professions are often too late to do as much good as they might have done had they flowered earlier. The evaluation instruments developed by the Conference on College Composition and Communication's Committee on the Evaluation of the Teaching of Writing, for example, reached English teachers ten years after The City University of New York's faculty negotiating unit, the Professional Staff Congress, wrote an evaluation system into the University's faculty contract, long after precedent set most of the institutional evaluation procedures in cement.

By advancing collaborative learning as a productive instructional mode for teaching literature and writing, however, English teachers have a rare opportunity to evolve a set of standards by which to judge classroom performance in the new paradigm. Our first obligation is to define for ourselves what we see as efficient classroom models for collaborative learning. Our next obligation is to pass on to beginners the standards by which we measure our own performances so that new teachers seeking membership in this intellectual community have a class paradigm to study. And, finally, we are obliged to lay out for classroom observers what to look for as hallmarks of collaboration so that any judgments evaluators make about teaching performance are judgments our community has justified through thoughtful, disciplined discussion.

In an effort to move forward this evolution of standards for appropriate collaborative teaching models and to provide a temporary set of guidelines for the classroom observer of collaborative learning, I will look at the teacher's role in a collaborative session sequentially. I will confine my remarks to one of the most common kinds of collaborative learning, collaborative group work. Here, students perform some common task in small study and discussion groups. The class is divided into clusters of three to seven students each. Each group chooses a recorder to take notes on the conversation and, when the discussion ends, to report the group's deliberations to the whole class. The time required for a collaborative effort depends on the task, but 15 or 20 minutes is a bare minimum. The teacher helps the class compare results, resolve differences, and understand features of the task that students did not work out on their own.

The Teacher as Task-Setter

The success of the collaborative model depends primarily upon the quality of the initial task students must perform in groups. Hence, the instructor's role as task-setter is one that any observer must view with great attention. "What is essential," Bruffee writes, "is that the task lead to an answer or solution that can represent as nearly as possible the collective judgment and labor of the group as a whole" (Bruffee, 1985, 45).

The group's effort to teach consensus by their own authority is the major factor that distinguishes collaborative learning from mere work in groups. What is consensus? Unfortunately, the word is widely misunderstood as a dimension of collaborative learning. It is not an activity that stifles differences or intends to make conformists out of divergent thinkers. John Trimbur asserts in a letter to the author that those new to collaborative learning often miss

> the process of intellectual negotiation that underwrites the consensus. The demand for consensus that's made by the task promotes a kind of social pressure. Sometimes, to be sure,

> this pressure causes the process of negotiation to short circuit when students rush to an answer. When it works, however, the pressure leads students to take their ideas seriously, to fight for them, and to modify or revise them in light of others' ideas. It can also cause students to agree to disagree--to recognize and tolerate differences and at best to see the value systems, set of beliefs, etc. that underlie these differences.

Consensus, he points out, "is intellectual negotiation which leads to an outcome (consensus) through a process of taking responsibility and investing collective judgment with authority."

Certainly methodology in education for many years has depended upon group work, but it is generally not an activity that demands collective judgment. In elementary and secondary schools, for example, teachers of reading, spelling, and mathematics divide students into groups for skills instruction, each group at a different level. Such groupings permit those with like abilities to investigate topics at the same rate and with the same intensity as their peers. But this kind of group work is by no means collaborative learning. It merely subdivides the traditional hierarchical classroom into several smaller versions of the same model. Despite the groups, the teacher remains the central authority figure in the student's attempts to acquire knowledge.

Other popular yet perhaps more imaginative types of group activity--clusters of students working on a common project or experiment, say--also rarely build upon the idea of a learning community that leads to joint decision. Much group work on projects and experiments of this sort is only the sum of its parts, each student contributing his or her piece without the vital "intellectual negotiation" that "places the authority of knowledge in the assent of a community of knowledgeable peers" (Bruffee, 1982, 107). Students put into groups are only students grouped and are not collaborators, unless a task that demands consensual learning unifies the group activity.

To assure that the teacher in a collaborative learning classroom is guiding students to collective judgments in groups, evaluators are right to insist that the task be written down. A written task provides the language that helps to shape students' conversations. An observer asked to judge a class session in collaborative learning must first scrutinize the task and then comment on it in the evaluation report in the same way he or she would comment on the teacher's preparation for any lesson. To look only at the outward manifestations of the collaborative classroom--the fact that students group together and talk within their groups--is to look at the activity with one eye closed.

Peter Hawkes points out in a letter to the author important differences between collaboration and group work, and these differences inhere in the nature of the task:

Sometimes in mere group work the teacher sets a task or poses a question that has an answer that the teacher has already decided on. Groups take on the role of the smart kid in class who guesses what's on the teacher's mind. The evaluator should examine the task assigned and the way the teacher responds to the student reports in the plenary session to see whether the authority of knowledge has been shifted temporarily in the classroom. In CL, the teacher should ask questions that have more than one answer or set problems that are capable of more than one solution. In other words, sincere questions rather than pedagogical ones. The CL teacher is interested in the way the students come up with their consensual answer, the rationale for that answer, the opportunities for debate among groups, the suggestion of how knowledge in a discipline is arrived at rather than in leading students toward an already acknowledged "right answer." CL changes the student-teacher relationship; mere group work appears to but does not.

A good written statement of task will probably have a number of components: general instructions about how to collaborate in this particular activity; a copy of the text, if a single text is the focus of the collaboration; and questions appropriately limited in number and scope and offered in sequence from easier to more complex, questions requiring the kind of critical thinking that leads to sustained responses from students at work in their groups. Since collaborative group work normally should move toward consensus, instructions almost always should require a member of the group to record this consensus in writing.

But although one member writes the report, the group as a whole shapes it. Some experienced collaborative learning teachers insist that the recorder do something more like a performance after the work in the group ends--a formal presentation to the class, participation in a debate with recorders from other groups, or some other responsible social activity that may be subjected to group judgment. When recorders must perform, these teachers argue, the recorders keep the groups functioning smoothly and efficiently.

The teacher's role as task-setter often must go beyond simply writing the assignment down and distributing it. This is especially true when students consider varied texts collaboratively (their own papers, for example). The instructor may have to guide the manner in which students attack the task by reviewing some of the principles that need attention if activity is to move forward before the group work begins. For example, in a typical collaborative session, dividing students into small groups to read and provide commentary on the coherence of a practice essay, an instructor might explain to the class at the beginning of the hour some of the principles of coherence in expository writing.

Or, if students are to comment on drafts of each other's essays, the teacher could begin by asking student groups to generate a *Reader Response Guide*. Asking the class "Which two or three vital questions do you wish to have answered about your draft so that you can take it to the next stage," and then collecting the questions for everyone to see is effective because it reviews whatever was taught in an earlier class or in advance of the assignment; it highlights for the whole class the major issues to be addressed in this writing task; it calls attention immediately to the students' own most pressing concerns; and it gives the class an opportunity to buy into the collaborative process as shapers of their own learning.

The teacher

For evaluators the key issue here once again is that the task and the teacher's role in setting it must stimulate active learning that leads to an important outcome: consensus (either agreement or agreement to disagree) on the issue at hand. Many collaborative settings I've witnessed do not pay much attention to consensus. Students divided into groups to examine drafts and to "discuss" their papers, but who lack specific guidelines, will flounder. I saw one class session like this where students told to discuss their drafts discussed only their errors in spelling and sentence structure, probably the least valuable things to talk about in the early stages of composing. Perhaps even more troublesome than activities inappropriate to the task is no collaboration at all. The risk is great that, without clear guidelines, students will just pat each other on the back, attack each other counterproductively, or fall silent.

An observer in a collaborative setting, then, must consider the task set by the teacher as the first essential element in any evaluation. The task must figure very prominently in judgments about the class. Questions an observer might ask about the task are: Is it clearly worded and unambiguous? Does it split the exercise into workable segments? Do students know what to do and how to do it? Is the task pertinent to the students' needs, goals, and abilities? Does the exercise move toward consensus? Do the questions students deal with stimulate critical thinking? And, perhaps most important of all, does it call on what students can be expected to know in a way that will lead them together beyond what they already know--is the task difficult enough to challenge but not too difficult to stonewall conversations? **(INSERT TABLE "QUESTIONS OBSERVERS SHOULD ASK ABOUT COLLABORATIVE TASKS)**

The Teacher as Classroom Manager

The second aspect of collaborative learning for evaluators to consider is the teacher as classroom manager. With the task laid out, how does the teacher implement the actual act of collaboration? How does the teacher organize the social relation in which learning will occur? Have students learned to form groups easily and with relative speed? Are chairs organized in well-spaced clusters so that group conversations do not drown each other out? Do group members demonstrate an ability to work together, one person talking at a time, others listening? Are time limits clear and generally adhered to, and yet flexible? Does the teacher check on how much more time the groups may need as the prescribed end point draws near, and perhaps urge the groups to move on to complete their tasks? If a recorder or reporter is required--the member of each group who acts as synthesizer of the discussion--are his or her functions clear? Does the recorder or reporter take down statements carefully and check with group members for accuracy? **(INSERT TABLE: "QUESTIONS OBSERVERS SHOULD ASK ABOUT IMPLEMENTING COLLABORATIVE LEARNING")**

The Teacher's Role During Group Work

The third aspect of collaborative learning that evaluators should examine carefully is the teacher's behavior while the groups are working. Most teachers I have observed travel from group to group answering questions from students, participating in discussions, probing with further questions, guiding responses, and focusing students' attention on the task. Although some of these steps may be necessary from time to time, the teacher's presence as a group member challenges one of the basic tenets of collaboration in the classroom. "The purpose of collaborative learning...," Bruffee points out, "is to help students gain authority over their knowledge and gain independence in using it" (Bruffee, 1985, 49). In the classroom "teachers create social structures in which students can learn to take over the authority for learning as they gain the ability and confidence to do so" (49). A teacher joining a group can easily undermine the development of that authority and that confidence. All attention will turn to the teacher as the central figure in the learning process.

Usually, collaboration advances best when groups are left pretty much to the students themselves. At this point in the process, in most cases the best teacher is usually the seemingly most idle teacher, busy with other tasks or even going out of the room from time to time as the groups conduct their business. Evaluators, then, should not judge harshly a practitioner of collaborative learning who reads papers or who leaves the class during small group discussions.

An observer can learn a great deal about prior instruction by watching how students engage in the group task. The noise level in the room, the arrangement of furniture, the ease with which the groups are formed, the tone of conversation among students, the nature of reports emerging from groups all indicate how much the class has practiced efficient collaborative schemes in the past. Evaluators, therefore, should note very carefully how students behave in their groups as a signal of the teacher's advance preparation. Group management is the teacher's responsibility, and the collaborative learning teacher pays careful attention to dynamics and composition. Are there too many monopolizers in one group? too many withdrawn students? too many unprepared students? If a group is not working at the task or if a group delivers a weak report, how does the teacher respond? (**INSERT TABLE: "TIPS FOR STUDYING COLLABORATIVE CLASSROOM DYNAMICS"**)

Evaluators should pay particularly close attention to the reporter's role after group activity ends. If selected students make thoughtful, responsible, well-planned presentations to the whole class, the evaluator knows that the teacher has built collaboration theory into the structure of the course prior to the evaluation session. Student behavior in groups and at the reporting stage is an important signal for the teacher's skill in the uses of collaborative learning.

The Teacher as Synthesizer

The fourth aspect of collaborative learning that the classroom observer must consider is how the teacher performs in the role of synthesizer after the activity in groups is complete. Once the groups finish their work, it is important for each recorder to share the group's consensus with the rest of the class. With this done, the teacher must help the class as a whole to make sense and order out of the sometimes conflicting and contradictory reports.

Writing the points raised by each group on the chalkboard or on a transparency for the overhead projector (or asking recorders themselves to do this) allows everyone to discuss and evaluate the conclusion arrived at by the groups. Even when a consensus report does not follow inevitably from the task, when, for example, students read their drafts aloud to each other for revision, a report on the process itself or on what people think they learned from it may be useful. Questions from the teacher like "What were the general recommendations made to members of the group?" or "What did readers of your paper suggest that you do to take it to the next stage?" help to reinforce what has been learned as well as to establish the value of learning communities and of peer review in any intellectual process.

How the teacher conducts this plenary discussion is very important to the success of collaborative learning. First, the teacher helps students synthesize each group's results with the results produced by other groups. The teacher should lead the class to consider the similarities and contradictions in the recorded points of view and should unite them all, if possible, into a larger vision. The instructor must help students see their differences and to reconcile them. Here "the teacher acts as a referee, directing the energies of the groups on two sides of a divided issue to debate the matter until the parties either arrive at a position that satisfies the whole class or until they agree to disagree" (Bruffee, 1982, 52).

With agreement, then, the teacher's role once again changes. The teacher now must help the class move further toward joining another community of knowledgeable peers, the community outside

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the classroom, the scholars who do research in the discipline, who establish the conventions of thinking and writing in those disciplines, who write books and articles and read papers on the problem at hand. "What happens when we learn something," Bruffee writes, "is that we leave a community that justifies certain beliefs in a certain way and join another community that justifies other beliefs in other ways. We leave one community of knowledgeable peers and join another" (Bruffee, 1982, 105). By synthesizing results of the individual groups, and comparing that synthesis with the consensus of the larger community of knowledgeable peers--the teacher's own community--the teacher helps complete the movement into this larger community.

An observer considering these last two features of the teacher's role--as synthesizer and as representative of the academic community--must be prepared to evaluate the teacher's knowledge of content as well as the teacher's ability to bring the class to perceive differences and similarities in the conclusions of the groups. The teacher must guide students to classify the ideas presented by the various groups without judging one idea right and the other wrong, but by helping the class to investigate the reasoning used to develop and shape the ideas. The teacher also must lead the class to consider how their consensus differs from the consensus of the larger community, and must lead the class to speculate about how that larger community might have arrived at its decision.

The skill with which the teacher manages the stages of collaboration is directly related to the teacher's knowledge of and commitment to the philosophical principles upon which collaborative learning is based (see Bruffee, 1984). An instructor who understands and believes in knowledge as a social construct will see group reporting as an important means of advancing knowledge in the classroom. On the other hand, an instructor willing to experiment with group work but clinging to the Mirror-of-Nature metaphor will find it hard to avoid using the group setting as anything other than a microcosm of the lecture hall. Many teachers who attempt collaborative learning but abandon it are frequently trying to achieve the same end in groups that they tried to achieve in the more familiar lecture-recitation session or Socratic dialogue. Thus, an appropriate evaluation should consider the teacher's understanding of collaboration as a means to generate knowledge as a social construct and not simply as the use of a new configuration of students in the classroom.

Yet a one-hour class does not always easily reveal a teacher's knowledge of the rationale for collaboration. Evaluators, therefore, may find it useful to consult with teachers either before or after the class in order to uncover the roots of the particular program of learning for the session. Furthermore, the evaluator's interests must extend to the whole course of study and should not be confined exclusively to a single hour's instruction. Too often collaborative activities are a chain of exercises, unrelated to each other. Thus, in a conference with the teacher, an evaluator should aim to discover the goals of the course as a whole and the relation of these goals to the collaborative task just observed. **(INSERT TABLE: "ADDITIONAL TIPS TO AID THE COLLABORATIVE LEARNING EVALUATOR")**

Summary

I am not unaware of the problems that inhere in the kind of evaluation that this essay is advocating. Collaborative learning is messier in practice than in theory; no one can "live" the theory as clearly as the model suggests. As Harvey Kail points out in a letter to the author:

> One doesn't simply eradicate the 'mirror-of-nature metaphor' from one's life as if one were changing from Crest to Colgate. Sometimes I find myself back in the old world, the one where knowledge IS 'out there' and my job is to find it and my students job is to model my search. Other times, more frequently now, I see conversation, its give and take, as the central manufacturing process of knowledge and appropriate ways of talking (and writing) as the goal. At the same time, I also believe that the lecture is a perfectly legitimate mode of teaching, even within the boundaries established by CL theory. So...I contradict myself....very well...

Certainly, a commitment to collaborative learning is based on a desire to confront the traditional view of knowledge in our own lives. Like all confrontations, this too is anything but smooth and simple.

Yet my purpose here is to move the practitioner of collaborative learning to an ideal model that will help students achieve knowledge in the classroom. Toward that end, I wish to summarize the features of the collaborative session that an outside evaluator should consider:

1. the nature and quality of the task statement.
2. the social setting of the collaborative activity and the behavior of students during the execution of the task.
3. the teacher's behavior during the execution of the task.
4. the teacher's role in group composition and management.
5. the nature and quality of the reports made by each group.
6. the teacher's performance as synthesizer and as representative of the academic learning community.
7. the relation of the collaborative activity to the design of the course.
8. the teacher's knowledge of and commitment to the rationale of collaborative learning.

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The critical underlying principle for evaluators is that in the collaborative learning classroom the instructor is in no sense a passive figure. Collaborative learning is not unstructured learning; it replaces one structure, the traditional one, with another, a collaborative structure. The roles I have attempted to outline here define some of the elements to consider in evaluating a teacher's effectiveness as a leader of collaborative learning within this new structure.

Expecting students to engage in productive conversation simply by reshuffling chairs, by telling them to work together in groups, or by requiring, without further guidance, that they read each other's papers, can easily stymie collaboration and not stimulate it. I have seen reflected in the attitude of teachers inexperienced with collaboration and inattentive to its complexities as a mode of learning an often unfulfilled plea to students: "Don't just sit there--collaborate!" Neither inactive nor nondirective, the teacher in the collaborative classroom must plan and organize the session so that students know that the end is not simply to work in groups but to work in groups in an effort to reach consensus for an important task. The effective collaborative learning teacher is one who understands the basis and structure of collaborative learning and who knows how to lead students to work productively within it.

Author's note: I have based my comments in this essay upon many years' experience in observing college English teachers as part of a required program of classroom observation as well as upon my work in supervising teachers across the curriculum in LaGuardia ongoing faculty development effort, the Integrated Skills Reinforcement Project. But I have shared this paper with a number of colleagues who have long been at the forefront of collaborative learning--including my mentor in all this, Kenneth Bruffee, and Marian Arkin, John Bean, Peter Hawkes, Harvey Kail, Carol Stanger, and John Trimbur. Of course, I assume all responsibility for the points made here, but I acknowledge with gratitude the thoughtful comments and suggestions of my colleagues as this paper evolved from draft to draft.

Wiener, H. S. (1986). Collaborative learning in the classroom: A guide to evaluation. College English, 48(1), 52-61. Copyright (1986) by the National Council of Teachers of English. Reprinted with permission.

TABLES

QUESTIONS OBSERVERS SHOULD ASK ABOUT COLLABORATIVE TASKS

Is the task clearly worded and unambiguous?
Does the task split the exercise into workable segments?
Do students know what to do and how to do it?
Is the task pertinent to the students' needs, goals, and abilities?
Does the exercise move toward consensus?
Do the questions students deal with stimulate critical thinking?
Does the task call on what students can be expected to know in a way that will lead them together beyond what they already know?

QUESTIONS OBSERVERS SHOULD ASK ABOUT IMPLEMENTING COLLABORATIVE LEARNING

How does the teacher implement the actual act of collaboration?
How does the teacher organize the social relation in which learning will occur?
Have students learned to form groups quickly and easily?
Are chairs organized in well-spaced clusters so that group conversations do not drown each other out?
Do group members demonstrate an ability to work together, one person talking at a time, others listening?
Are time limits clear and generally adhered to, and yet flexible?
Does the teacher check on how much more time the groups may need as the prescribed end point draws near, and perhaps urge the groups to move on to complete their tasks?
If recorders or reports are required, are their functions clear?
Does the recorder or reporter take down statements carefully and check with group members for accuracy?

TIPS FOR STUDYING COLLABORATIVE CLASSROOM DYNAMICS

Does the noise level and arrangement of furniture facilitate collaborative learning?
Are there too many monopolizers in one group or too many withdrawn students?
Are there too many unprepared students?
If a group is not working at the task or if a group delivers a weak report, how does the teacher respond?

ADDITIONAL TIPS TO AID THE COLLABORATIVE LEARNING EVALUATOR

Consult with the teacher before or after class to uncover the roots of the particular program of learning for the session.
Study the whole course; avoid the one-time visit to evaluate.
Learn the goals of the course and the relationship of those goals to the collaborative tasks.

Ed.'s note: Another widely recognized researcher in this area, Robert Slavin summarizes the research which occurs primarily at the primary and secondary level but also at the level of higher education. He focuses on areas of agreement and disagreement in the research. In a nutshell, researchers agree that cooperative learning can produce positive effects on achievement but disagree on the conditions under which those positive effects will be found.

Research on Cooperative Learning: Consensus and Controversy

Robert E. Slavin

Cooperative learning is one of the most thoroughly researched of all instructional methods. In a recent review (Slavin, 1989a), I identified 60 studies that contrasted the achievement outcomes of cooperative learning and traditional methods in elementary and secondary schools. To be included in my review, studies had to have lasted at least four weeks, and experimental and control classes had to take the same achievement tests under the same conditions. Using different inclusion criteria, Johnson and colleagues (1981) identified 122 achievement studies. Most of these studies also measured many outcomes in addition to achievement.

With so many studies, one would imagine that a consensus would emerge about the nature and size of the effects of cooperative learning; and, in fact, the areas of agreement among cooperative learning researchers far outweigh the areas of disagreement. Yet there remain several key points of controversy among researchers and reviewers that concern the conditions under which cooperative learning is instructionally effective. This article briefly summarizes the main areas of consensus and controversy in research on cooperative learning.

Cooperative Learning and Student Achievement

Consensus

There is wide agreement among reviewers of the cooperative learning literature that cooperative methods can and usually do have a positive effect on student achievement. Further, there is almost as strong a consensus that the achievement effects are not seen for all forms of cooperative learning but depend on two essential features, at least at the elementary and secondary levels. One of these features is *group goals*, or positive interdependence: The cooperative groups must work together to earn recognition, grades, rewards, and other indicators of group success. Simply asking students to work together is not enough. The second essential feature is *individual accountability*: The group's success must depend on the individual learning of all

group members. For example, group success might depend on the sum of members' quiz scores or on evaluation of a report in which each group member contributed his or her own chapter. In contrast, studies of methods in which students work together to prepare a single worksheet or project without differentiated tasks hardly ever find achievement benefits (Slavin, 1989a).
(INSERT TABLE "COOPERATIVE LEARNING CONSENSUS" NEAR HERE)

The degree of consensus on the achievement effects of cooperative learning methods that use group goals and individual accountability is considerable. I am aware of four full-scale reviews by different authors on this topic. My own reviews (Slavin 1983, 1989a, 1990) have focused on secondary schools (middle, junior, and high schools), and Davidson (1985) has reviewed research on cooperative learning in mathematics.

The findings of the four reviews were similar. My own concluded, "Cooperative learning can be an effective means of increasing student achievement, but only if group goals and individual accountability are incorporated in the cooperative methods" (Slavin, 1989a, 151). Newmann and Thompson (1987) came to similar conclusions:

> A review of the research on cooperative learning and achievement in grades 7-12 produced 27 reports of high-quality studies, including 37 comparisons of cooperative versus control methods. Twenty-five (68 percent) of these favored a cooperative learning method at the .05 level of significance. . . . The pattern of results supports the importance not only of a cooperative task structure, but also of group rewards, of individual accountability, and probably of group competition as well. (11-12

Davidson (1985) wrote: "If the term *achievement* refers to computational skills, simple concepts, and simple application problems, the studies at the elementary and secondary levels support Slavin's (1983) conclusions. . . . 'Cooperative learning methods that use group rewards and individual accountability consistently increase student achievement more than control methods in . . . elementary and secondary classrooms'" (224). All four reviews mentioned group goals and individual accountability as essential elements of cooperative learning.

Controversy

While no reviewer has yet expressed doubt that there is a broad set of conditions under which cooperative learning will increase student achievement, there is controversy about the specific conditions under which positive effects will be found.
(INSERT TABLE "COOPERATIVE LEARNING CONTROVERSY" NEAR HERE)

One focus of controversy has been a debate between David and Roger Johnson and me that has more to do with different views on what constitutes adequate research than on questions of the essential elements of cooperative learning. The main elements of this debate have been covered in earlier issues of *Educational Leadership* (see Slavin, 1988; Johnson & Johnson, 1989; Slavin, 1989b).

In addition to the controversy between the Johnsons and me, several other issues have been raised by various writers and reviewers. One issue is whether cooperative learning is effective at all grade levels. Newmann and Thompson (1987) question whether cooperative learning is effective in senior high school (grades 10-12). There is ample evidence that these methods are instructionally effective in grades 2-9, but relatively few studies examine grades 10-12. More research is needed in this area.

Another issue is the effects of cooperative learning at the college level. Again, there are relatively few studies at this level, and the results are not as consistent as those from elementary and junior high/middle schools. However, there are several examples of positive achievement effects of cooperative learning in senior high school and college settings (see, for example, Sherman & Thomas, 1986; Fraser et al., 1977).

Another question being debated is the appropriateness of cooperative learning for higher-order conceptual learning. Most cooperative learning studies have focused on basic skills (mathematics, language arts, reading), but several have successfully taught such higher-order skills as creative writing (Stevens et al., 1988). Studies of Sharan's Group Investigation method (see, for example, Sharan et al., 1980) and of the Johnsons' constructive controversy methods (see, for example, Smith et al., 1981) have reported particularly strong effects on higher-order understanding in social studies.

Davidson (1985) has questioned whether group goals and individual accountability are necessary at the college level, and there is some evidence that they may not be. Studies of pair learning of text comprehension strategies by Dansereau (1988), as well as some of the mathematics studies cited by Davidson (1985), provide examples of successful use of cooperative learning at the college level without group goals or individual accountability.

Outcomes Other than Achievement

In areas other than achievement, there is even broader consensus about the effects of cooperative learning. One of the most consistent of these is the effect on intergroup relations (see Johnson et al., 1983; Slavin, 1985). When students of different racial or ethnic backgrounds work together toward a common goal, they gain in liking and respect for one another. Cooperative learning also improves the social acceptance of mainstreamed academically handicapped students by their classmates (Johnson et al., 1983; Madden & Slavin, 1983), as well as increasing friendships among students in general (Slavin, 1990).

Other outcomes seen in many studies of cooperative learning include gains in self-esteem, liking of school and of the subject being studied, time-on-task, and attendance (Slavin, 1990). Studies by Sharan and colleagues (1984) have shown that extended experiences with cooperative learning can increase the ability to work effectively with others.

Basic Agreement

In every area of research there are debates about what the research means. Cooperative learning, a topic studied by many researchers from different research traditions, is certainly no exception. However, after nearly two decades of research and scores of studies, a considerable degree of consensus has emerged. There is agreement that--at least in elementary and middle/junior high schools and with basic skills objectives--cooperative methods that incorporate group goals and individual accountability accelerate student learning considerably. Further, there is agreement that these methods have positive effects on a wide array of affective outcomes, such as intergroup relations, acceptance of mainstreamed students, and self-esteem.

Research must continue to test the limits of cooperative learning, to broaden our understanding of *why* and *how* cooperative learning produces its various effects (see Bossert, 1988-89). Yet what we know already is more than enough to justify expanded use of cooperative learning as a routine and central feature of instruction.

Author's note: Preparation of this article was supported by a grant from the Office of Educational Research and Improvement, U.S. Department of Education (No. OERI-G-86-0006). However, any opinions expressed are mine and do not represent OERI positions or policy.

Slavin, R. E. (1989-1990). Research on cooperative learning: Consensus and controversy. Educational Leadership, 47(4), 52-55. *Copyright (c) 1989-90 by the Association for Supervision and Curriculum Development. Reprinted with permission. All rights reserved.*

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COOPERATIVE LEARNING CONSENSUS

--Cooperative methods do have a positive effect on student achievement.

--Cooperative groups must work together to earn rewards.

--A group's success must depend on the individual learning of all group members.

--Cooperative learning positively influences intergroup relationships, acceptance of mainstreamed students, and self esteem.

COOPERATIVE LEARNING CONTROVERSY

--Is cooperative learning effective at all grade levels from through higher education?

--Is cooperative learning appropriate for higher-order conceptual learning?

--Are group goals and individual accountability necessary at the college level?

Ed.'s note: This annotated bibliography lists and summarizes useful materials on assessing the effects of collaborative learning. It makes clear what work has been accomplished in this area as well as what still remains to be done.

SECTION C
Annotated Bibliography

Abercrombie, M. L. (1960). The anatomy of judgement. New York: Basic Books; Harmondsworth, England: Penguin.

Early research on the effects of collaborative learning.

Chambers, B., & Abrami, P. C. (1991). The relationship between student team learning outcomes and achievement, causal attributions, and affect. Journal of Educational Psychology, 83(1), 140-146.

Elementary school students studied mathematics using the Teams-Games-Tournaments cooperative learning strategy. The authors conclude that being a member of a successful team impacts positively on feelings of individual ability; conversely, being a member of an unsuccessful team impacts negatively on feelings of individual ability. They suggest, therefore, that cooperative learning strategies which increase the possibility of team success be used (i.e., criterion referenced measures of success rather than between-teams competition).

Curtz, T. (1991). Teaching self-assessment. Washington Center NEWS, 6(1), 23-25.

Explores using student self-assessment as a vehicle for furthering the reflective habits of students about their own learning. "For both teacher and student what is at the center of this process is thinking in Dewey's sense: developing the capacity for the self-reflective assessment of one's activities" (p. 25).

Danserreau, D. F. (1983). Cooperative learning: Impact on acquisition of knowledge and skills. Technical Report 586. (ERIC Document Reproduction Service No. ED 243 088)

Report of an experimental study asking either pairs of students or individual students to read a selected text. Students were tested on recall of material. Paired students using a cooperative strategy scored higher on tests of recall than students studying alone.

Fraser, S. C., Diener, E., Beaman, A., & Kelem, R. (1977). Two, three or four heads are better than one: Modification of college performance by peer monitoring. Journal of Educational Psychology, 69, 101-108.

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Describes the effect that working in pairs or individually had on student's achievement. Results indicated that those in groups of any size received higher course grades than those working alone.

Frierson, H. T. (1986). Two intervention methods: Effects on groups of predominantly black nursing students' board scores. *Journal of Research and Development in Education*, *19*, 18-23.

Students studying cooperatively in groups received higher state board exam scores than those studying alone or those receiving test taking strategies instruction.

Hunter, S. (1991). Walking the assessment line at a non-traditional college: The Evergreen experience. *Washington Center NEWS*, *6*(1), 13-17.

Speaks to the issue of providing aggregate-level assessment data to governing bodies and accrediting agencies versus collecting individual-level data which may be seen as more useful to professors. The article also describes five assessment projects undertaken to learn more about the teaching and learning environment at the College.

Kohn, A. (1986). *No contest: The case against competition*. Boston: Houghton Mifflin.

A marvelously convincing book on the merits of cooperative goal structures and the dangers of competitive goal structures. Chapters examine the pervasive effects of competition on our work, play, and educational systems. Includes comprehensive references, although most education references concern elementary and secondary schools. If you need to convince your colleagues to try cooperative educational strategies, have them read this book. (Note: Kohn's use of the term cooperative does not connote the specific educational strategies called Cooperative Learning.)

Johnson, D. W., Maruyama, G., Johnson, R., Nelson, D., & Skon, L. (1981). Effect of cooperative, competitive and individualistic goal structures on achievement: A meta-analysis. *Psychological Bulletin*, *89*, 47-62.

An often cited source on the effects of cooperative learning. Most studies are of K-12 students, but some college classroom studies are included.

O'Donnell, A. M., Dansereau, D. F., Rocklin, T., Lambiotte, J. G., Hythecker, V. I. & Larson, C. O. (1985). Cooperative writing: Direct effects and transfer. *Written Communication*, *2*(3), 307-315.

O'Donn ompares the performance of students who cooper on instruction writing tasks with that of student o worked alone. The article concludes that coopera g dyads can improve the communicative quality of their i ructed writing.

Sharan, S. (1980). Cooperative learning in small groups: Recent methods and effects on achievement, attitudes, and ethnic relations. Review of Educational Research, 50(2), 241-271.

Comparative review of effects of using five different team learning approaches with elementary and secondary school students. A portion of the review focuses on team learning and race relations and looks at the effect of the different approaches on cross-ethnic helping behavior and friendships. Sharan notes that limited experimental data is available in this area, and therefore conclusions are tentative. May be a good article to consult if team learning approaches (Aronson's Jigsaw classroom, DeVries' Teams-Games-Tournaments, Slavin's Student Teams and Academic Divisions, the Johnson's cooperative learning approach, and the Sharans' Small-group Teaching method) are of interest.

Smith, B. L., & MacGregor, J. (Eds.). (1991).Assessment and learning communities: Taking stock after six years [Special issue] Washington Center NEWS, 6(1).

This issue of the quarterly newsletter makes a major contribution to the encouragement of assessment of collaborative learning. Individual articles focus on "What differences do learning communities make?" and assessing the ways that learning communities affect faculty and students. Smith and MacGregor's article "Reflective interviews with learning community teaching teams: Strengthening dialogue about teaching and learning" (26-28) speaks directly to using qualitative or discovery methods of research to understand collaborative learning. (See Section E of this sourcebook, "Organizations and Networks," for ordering information.)

Tollefson, G. (1991). An outside-in view: Faculty views of collaborative learning communities in Washington community colleges. Wash on Center NEWS, 6(1), 10.

Describes survey aculty in 14 community colleges. "Respondents identified four ways in which learning communities met general education outcomes better than conventional classes: 1) learning communities provide more opportunities for student writing and speaking; 2) they encourage a more complex world view; 3) they encourage higher order thinking skills; and 4) they offer more coherent course work in general education." (p. 10)

Weigel, R. H., Wiser, P. L., & Cook, S. W. (1975). The impact of

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cooperative learning experiences on cross-ethnic relations and attitudes. *Journal of Social Issues*, *31*(1), 219-244.

An early study of the effects of small-group interactions on interethnic helping behaviors and friendship choices of seventh and tenth grade students. Cooperative interethnic contact was associated with strong positive interethnic relations and attitudes.

Ziegler, S. (1981). The effectiveness of cooperative learning teams for increasing cross-ethnic friendship: Additional evidence. *Human Organization*, *40*(3), 264-268.

Follow up of an earlier study by Weiger, Wiser, and Cook (1975) that found strong positive effects of cooperative learning groups on interethnic relations among school children. This study of sixth graders extends these findings to an urban setting with high levels of interethnic interaction.

Ed.'s note: This bibliography contains a variety of additional materials related to assessing collaborative learning. References cited in the articles appearing in section C are included in this bibliography.

SECTION C
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SECTION D
WHERE IS COLLABORATIVE LEARNING USED?

This section is divided into two parts: "Who is using Collaborative Learning" and "Collaborative Networks." In the first part, we have listed the names and contact information of people at colleges and universities across the country who are employing some form of collaborative and/or cooperative learning. The descriptions indicate whether collaborative learning is being used in individual courses, integrated courses (learning communities, federated learning communities, and coordinated studies programs), student-faculty teaching, student-faculty research, or some other arrangement. Although we tried to make this section as comprehensive as possible, we know that there are people and programs we were unable to reach. Therefore, this section represents only a portion of those using collaborative/cooperative learning strategies being used in higher education.

In "Collaborative Networks," we have listed the location and contact people for several collaborative learning networks across the nation. We have also included a brief description of each network to help you familiarize yourself with their different qualities.

The intent of both these sections is for you to identify people near you who are doing something similar to what you are doing (or something that you would like to be doing), and to help you contact them and share ideas and resources. The individuals we talked to were enthusiastic about their experiences with collaborative learning and eager to talk to others. We encourage you to read through the list, then pick up the phone and start collaborating!

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Who is using Collaborative Learning?

Ball State University
Arno Wittig
Muncie, IN 47306-0185
317 285-1024
Undergraduate Fellows Program

The program was established to identify, recruit, and retain outstanding undergraduates, providing them and their faculty mentors with collaborative experiences in research or creative endeavors unlike those found in the classroom. Close contact between the Fellows and Mentors enriches both, extending boundaries and developing relationships of shared responsibility and fulfillment. Fellows work an average of 10 hours per week for 15 weeks each semester, earning $750 per semester. Length of appointment is based on the nature of the proposal, but cannot exceed 2 semesters plus one summer.

Daytona Beach Community College
Cynthia Avens
1200 Volusia Ave.
Daytona Beach, FL 32120
904 255-8131
QUANTA Interdisciplinary Learning Community

Three courses--English, psychology, and humanities--are integrated around a common theme each semester of the freshman year. Three faculty and 75 students are involved. QUANTA's interdisciplinary format requires student to make connections between the disciplines, thus encouraging the ability to integrate and synthesize ideas. Students cooperate with each other through group projects and discussions, experiencing diverse perspectives on issues and problems. Research with the Measure of Intellectual Development has shown a high level of cognitive growth among students participating in the QUANTA program.

Bellevue Community College
Joy Carey
3000 Landerholm Circle SE
Bellevue, WA 9800
206 649-31527
Inter-Disciplinary Studies Program

Interdisciplinary Studies combines different disciplines around a central theme. It emphasizes the interconnections between disciplines as well as the knowledge and skills relevant to each discipline. Instructors from different disciplines work as a team. Students participate actively in lecture/discussion sessions, on-going,seminars and other small group activities.

LaGuardia Community College
Joan Greenbaum
31-10 Thompson Ave.
Long Island City, NY 11101
Introduction to Computing course

Dr. Greenbaum has compiled a collection of activities and handouts to use in her Introduction to Computing course. The activities include problem solving, use of video tapes, work in the library, writing a short story, and field research.

Western Washington University
Marie Eaton
Fairhaven College
Bellingham, WA 98225
206 676-3680
Fairhaven College

Started 25 years ago, Fairhaven College is an interdisciplinary, undergraduate unit of WWU in which students develop their own areas of study. Fairhaven uses student self-evaluation and narrative grades; students write a narrative self-evaluation and faculty respond with their own written evaluation. This type of grading is used to foster the kind of collaborative environment for learning which encourages growth in all students. Collaborative learning strategies are used in many of the classes, ranging from formally structured assignments to cooperative projects and group independent study projects.

Brooklyn College, CUNY
Kenneth Bruffee
188A Sixth Ave.
Brooklyn, NY 11210
718 780-4114
The Scholars Program, individual writing courses

Brown University
Rhoda Flaxman
Box 1962
Providence, RI 02912
401 863-1404
Writing and Rhetoric Fellows Program

This program, established in 1982, trains specially selected undergraduates as writing specialists and then makes them available as peer writing tutors for courses in a wide variety of disciplines. Writing Fellows training focuses on collaborative learning; the students' seminar is a lively discussion section and students comment and conference on each others papers. Writing Fellows work with students by asking provocative questions and explaining to students how their writing and speaking may affect their audience. Rhetoric Fellows are advanced Writing Fellows trained to assist with both writing and speaking assignments.

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Brown University
Karen Romer
Box 1840
Providence, RI 02912
401 863-2411
Undergraduate Teaching & Research Assistant Program/Odyssey II

The program has three goals: 1) to strengthen multi-cultural perspectives and pluralize the cultural perspectives of the curriculum, 2) to support faculty who initiate such change in their courses, and 3) to provide training in research and a strong mentoring opportunity for students who initiate multi-cultural questions.

Centralia College
Don Foran
600 W. Locust St.
Centralia WA 98531
206 736-9391
Learning communities

Individual English and Ethics courses; uses peer feedback on essays, and group research and reporting of a topic.

East Stroudsburg University
Peter Hawkes
English Dept.
East Stroudsburg, PA 18301
717 424-3398
Individual courses

Collaborative learning in English courses.

Eastern Washington University
Jeffers Chertok
220 Showalter Hall
Cheney, WA 99004
509 359-2201
Freshman Interest Group Program

FIGs are composed of 30 first quarter freshmen, each registered in three common courses. The courses meet the General University Requirements in a specific distributional area. FIGs are supported by two student assistants and are provided with social activities, field trips, and an integrated learning experience.

Frederick Community College
Jerri Lindblad
Frederick, MD 21702
301 846-2564
Individual courses

Collaborative learning in English courses; has used collaborative learning in teaching and as a process for curricular development and administrative structure.

Fairleigh Dickinson University
John Becker
Florham-Madison Campus
Rutherford, NJ 07070
201 593-8717
University Core Curriculum

The Core is a four-course interdisciplinary sequence required of all students. Collaborative learning assignments are used to engage students actively with ideas that emerge from readings and class discussions. These assignments are fundamental to helping students understand the interdisciplinary approach and demonstrating how multiple perspectives can deepen comprehension of specific issues. The method also leads to greater student participation in the courses by giving them more opportunities for interaction and expression.

Gallaudet University
Donna Mertens
DEFR - FH406
800 Florida Ave. NE
Washington, DC 20002
202 651-5202
Cooperative learning with college students

Uses scripted dyad approach (developed by Dansereau, 1985) to teach educational psychology to deaf students in a preservice teacher education program.

Indiana University
Kris Bosworth
W.W. Wright Education Building
Bloomington, IN 47405
812 855-5390
Teacher preparation program

Provides exposure to collaborative and cooperative learning strategies for students enrolled in the teacher preparation curriculum. By enabling students to participate in these strategies through their college courses it is hoped that they will continue to use them in their own public school classrooms.

Johns Hopkins University
Robert Slavin
3505 N. Charles St.
Baltimore, MD 21218
301 338-7570
Student Team Learning (K-12)

Students learn in small, carefully structured learning teams and are rewarded for working toward a common goal. They help one another learn, gain in self-esteem and feelings of individual responsibility for their learning, and increase in respect and liking for their classmates, including their mainstreamed classmates and classmates of other races.

LaGuardia Community College
Judy Bieber
31-10 Thomson Ave.
Long Island City, NY 11101
718 482-5222
Collaborative learning in Cooperative Education Seminars

In the Spring of 1989 a new curriculum was created for students on their first internship assignments. This experientially based seminar titled "The Self in the Work-place" examines issues of values, leadership, organizational structure, decision making, and corporate culture. The primary instructional objectives of the seminar are to enable the students to become analytical observers of their internship settings and to demonstrate the role that the team process plays in American culture both in society and at the work place.

LaGuardia Community College
Roberta Matthews
31-10 Thompson Ave.
Long Island City, NY 11101
718 482-5405
Enterprise

Enterprise was developed to help students connect ideas and skills from one subject area to another and to develop the skill to become active and independent learners. To accomplish these goals, Enterprise provides faculty development seminars and has become a center for faculty-initiated curriculum innovation and experimentation. Faculty have developed the following strategies: thematically linked course clusters and pairs, courses enhanced with student-led study groups, and innovations in how to obtain student feedback on teaching and learning.

LaGuardia Community College
Martin Millman
31-10 Thomson Ave.
Long Island City, NY 11101
718 482-5710
Enhanced Calculus I with Study Groups

In addition to the normal class hours of instruction, students in Enhanced Calculus I meet for two "lab" hours per week. In the lab, groups of four to six students engage in calculus problem solving and receive help from an upperclass student mentor. Enhanced Calculus I was an experimental course, and student grades were compared with student grades in traditional calculus courses. The Enhanced Calculus I class averaged 12 points higher than the control class on three exams given during the semester, and 9 points higher on the final exam. Another section of the enhanced [illegible]e was being offered in Spring 1991.

Spokane Falls Community College
Ron Johns
W. 3410 Fort George Wright Dr.
Spokane, WA 99204-5288
509 784-3538
Coordinated Studies Program

Patterned after The Evergreen State College model.

Marymount College
Joseph Cuseo
30800 Palos Verdes Drive East
Rancho Palos Verdes, CA 90274
213 377-5501
Cooperative learning research

Massachusetts Institute of Technology
Norma McGavern
77 Massachusetts Ave.
Cambridge, MA 02139
617 253-7909
Undergraduate Research Opportunities Program

The UROP program fosters and supports research-based intellectual collaborations of undergraduates with faculty members. All undergraduates are welcome to participate in every phase of research activity on a credit, pay, or volunteer basis for a semester, or in most cases, a year or more. Essential ingredients for all cases are: active interchange with a faculty member who is responsible for guiding the intellectual course of the research, a written statement of purpose describing the project and the student's role in it, and evaluations--separate reports written by students and faculty (required at end of each term.)

Miami University
Lawrence Sherman
Center for Human Development, Learning, and Teaching
Oxford, OH 45056
513 529-6642
Individual courses; research

Cooperative goal structures used in Educational Psychology classes.

North Seattle Community College
David Mitchell
9600 College Way North
Seattle, WA 98103-3599
206 527-3747
Learning communities

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Two instructional formats are used. 1) Linked courses, where two or more courses are scheduled back-to-back and the content of one is reinforced and utilized in the other. Generally, the courses are not team taught, although the faculty work in close coordination on curriculum and assignments. 2) Coordinated studies, a block of 10-15 credits organized around a major theme(s). Students enroll for the entire program; a faculty team of three or four conducts lectures, seminars, and discussion groups. The program constitutes the entire teaching load for faculty members. Classes are scheduled in large blocks of time rather than 50-minute periods.

Ohio University
Mara Holt
Ellis Hall
Athens, OH 45701-2979
614 593-2838
Writing Program

Teaching Associates in the Writing Program are trained to teach freshman English using collaborative learning techniques in a five-hour course titled "Problems in the Teaching of College English." The current text is Elbow and Belanoff's A Community of Writers with its companion book Sharing and Responding. In addition, many teachers use collaborative learning and cultural studies in their junior level advanced composition courses.

Queens College, CUNY
George Held
65-30 Kissena Boulevard
Flushing, NY 11367-7238
718 520-7238
Student-faculty team teaching

A faculty member and a student team teach a course, Race and Racism--Introduction to American Studies. Each share equally in the responsibilities for planning and leading class discussions, setting exams and paper topics, and grading students' work. Collaborating harmoniously in the classroom, though free to contend with each other's views on racially sensitive material, each teammate (a white male professor and a black female undergraduate) hopes to set an example of the kind of cooperation possible between persons of different races and sexes.

University of Minnesota
Karl Smith
500 Pillsbury Dr. SE
Minneapolis, MN 55455
612 625-5522
Individual courses; research

Cooperative learning in Engineering courses.

Shoreline Community College

Marie Rose[illegible]er
16101 Green[illegible]d Ave. North
Seattle, WA [illegible]133
206 546-4651
Interdisciplinary Studies

Most typically the program includes two to four sets of 10 credit combinations of classes per quarter that either include a "content" course (i.e. Introduction to Nutrition) and a writing class, or two "content" courses, such as Canadian History and Canadian Literature. Two instructors teach the combined set. These courses are advertised in a separate section of the class schedule as well as through flyers and brochures. Occasionally, 15-18 credit "Learning Communities" that involve three or four faculty are offered.

St. Lawrence University
Richard Guarasci
116 Whitman Hall
Canton, NY 13617
315 379-5909
The First-Year Program

The First-Year Program is designed to foster a community that will nurture all its citizens--students, faculty and staff--as persons and as citizens. Four integrated components of the program combine to form the context of its debates: 1) a broad, interdisciplinary and team-taught "course" (a year-long curriculum) emphasizes the interplay of the individual and the community; 2) a writing, speaking, and research component that requires critical thinking; 3) an extensive and supportive advisement system; and 4) the program is conducted in the residence halls to stress the interconnection of community and personal development.

SUNY at Stony Brook
Theodore Goldfarb
Stony Brook, NY 11794-3700
516 632-7164
Federated Learning Communities

Each FLC is designed around an important theme--the conflict between national interests and the need to resolve global problems, for example, during the 1991-92 academic year--and students enroll in a common set of courses selected for their relevance to the theme. Students and faculty develop a sense of community by participating in a series of special educational and social enrichment activities that they plan together. The FLC office, lounge, and seminar room provide a physical "home" that promotes informal interaction and a sense of belonging among the program participants. See Hill, 1982, for additional description.

Tacoma Community College

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Gael Tower
5900 South 12th St.
Tacoma, WA 98465
206 566-5069
Coordinated Studies

Coordinated studies at TCC represent their attempts to reorganize and redirect their students' academic experiences for greater intellectual and social coherence and involvement. They bring together several existing courses, or actually restructure curricular material entirely, so that both students and faculty have strong opportunities for deeper understanding and integration of the course material they are using and learning.

Trinity University
Michael Doyle
715 Stadium Dr.
San Antonio, TX 78212
512 736-7379
National Conferences on Undergraduate Research

The NCUR supports an annual conference that provides undergraduate students in the sciences, arts, social sciences, and humanities with an opportunity to present the results of their research projects, scholarly work, or other creative endeavors. Students are encouraged to present work from all academic disciplines of undergraduate college and university programs. Faculty members and administrators have special sessions on how to manage successful undergraduate research programs and how to incorporate research and creative experiences in undergraduate curricula in all disciplines.

Tufts University
Robyn Gittleman
Miner Hall
Medford, MA 02153
617 381-3384
Experimental College

The Experimental College is a credit-awarding division of Tufts University. Programs are designed as electives to augment the regular undergraduate curriculum. Within the College, the Freshman Explorations program offers advising, learning, and a sense of community through credit-bearing seminars designed and led by upper-level undergraduates. A faculty member acts as the freshmen's academic advisor and a mentor to the undergraduate teaching team. Thus, the program incorporates two levels of collaborative education, faculty-student and student-student. Other collaborative programs include Freshman Perspectives and Quidnuncs.

University of Delaware
Joan Bennett
186 S. College Ave. Rm. 204

Newark, DE
302 451-89
Undergraduate Research Program

Through the Undergraduate Research Program, faculty members apprentice undergraduates as research collaborators. Over 600 faculty from all departments list available projects, and about 400 students participate each year. Students may begin as early as the freshman year, although most begin as sophomores or juniors. Work begun and experience gained as research assistants may form the basis for a senior honors thesis and/or professional publication.

University of Hawaii at Manoa
George Jacobs
1776 University Ave.
Honolulu, HI 96822
808 944-7878
Cooperative learning in individual courses

Students use cooperative learning strategies in an educational psychology class: feedback on writing, groups teaching portions of the class, student-student activities.

University of Maryland, University College
Barbara Millis
University Boulevard at Adelphi Road
College Park, MD 20742
301 985-7770
Promoting cooperative learning through faculty development

The faculty development program emphasizes cooperative learning and has offered many different workshops on cooperative learning. Over 125 faculty have participated and are using cooperative learning strategies with their adult students. During their mandatory New Faculty Orientation, they model several strategies such as "think-pair-share" and "numbered heads" while faculty in groups of six discuss a case study. The faculty development program has also established a cooperative learning users group (CLUG).

University of Massachusetts at Amherst
Anne Herrington
305 Bartlett Hall
Amherst, MA 01003
413 545-0610
Writing Program

Freshmen at the University of Massachusetts at Amherst take one of two freshman writing courses, Basic Writing or College Writing. Both are governed by the same assumptions: that writing is primarily an activity, and not a subject; that one learns to write by writing and receiving feedback; that writers need to become aware of their own writing process; and that the primary text of a writing course should be the students' own writing. Class size in both courses is limited to 20 students.

Seattle Central Community College
Rosetta Hunter
1701 Broadway
Seattle, WA 98122
Coordinated Studies Program

First offered in 1984, Coordinated Studies Programs (CSPs) consist of two to four faculty members team-teaching three or four classes for approximately 80 students. Students register for the CSP as a unit and receive between 10 and 18 credits for the quarter. CSPs are organized around a theme such as "Body & Mind" or "Africa in the Imagination" and the content may draw from such disciplines as art, psychology, writing, physiology, or history. A variety of teaching strategies are used including seminars, group projects, lectures, debates, and films.

The Evergreen State College
Barbara Smith
Olympia, WA 98505
206 866-6863
Learning communities

The curriculum at Evergreen is built around the model of coordinated studies--full-time, team taught, interdisciplinary programs which typically involve 16 credits per quarter. Three to five faculty members and about 20 students per faculty member register for one coordinated studies program each quarter. Courses offered within the program emphasize active learning around a theme, and classes meet for extended blocks of time during the week. This allows for group projects, discussions, and prolonged engagement with course material and program participants.

University of North Dakota
Gerald Lawrence
P.O. Box 8012
Grand Forks, ND 58202
701 777-3622
Integrated Studies Program

A one- or two-semester program for beginning students at the University. Five faculty members and 100 students organize the semester's work around a theme. Emphasis is put on thinking, close reading of texts, writing, and discussion skills. Meetings are held in a variety of settings: book seminars, cooperative learning units, laboratory sessions, writing groups, general program meetings, and field trips. Assessment of student work is done via student portfolios of all written work, and by periodic self-assessment of writing, laboratory work, and group activities.

University of Oregon
Jack Bennett
164 Oregon Hall
Eugene, OR 97403-1217
503 346-3211
Freshman Interest Groups

Freshman Interest Groups began at the University of Oregon in 1982. They provide an academically based social group of 25 students who share enrollment in three or four classes. When laboratory sessions or discussions are formed out of a large lecture class, FIG members are kept together. Beyond the classroom experience, each FIG is led by a trained returning student who leads weekly discussions and coordinates social and academic activities. Faculty are encouraged but not required to participate in FIG activities.

University of Texas at El Paso
Margarita Calderon
105 W. Union
El Paso, TX 79968
915 747-5366
Tutoring and Learning Center

The TLC, a division of Student Services, offers the following services to students: prepares students to organize and conduct collaborative study sessions for specific courses, for problem solving, or for developing learning strategies, teaching strategies and critical thinking skills; conducts workshops on support topics such as team-building, note-taking, and assertiveness training. It also provides a meeting place for students, faculty, and staff to relay messages and discuss issues, and provides a place for students to feel a sense of belonging.

University of Washington
Ken Tokuno
College of Arts and Sciences
Seattle, WA 98195
206 543-5340
Freshman Interest Groups

Each FIG consists of 20-25 freshmen sharing the same cluster of classes and a weekly proseminar. In each cluster of courses there is at least one small course which is composed only of members of the FIG. The proseminar is led by a senior or junior Peer Advisor who assists the students by providing information about the effective use of campus resources, suggesting how best to prepare and study for college level courses, and bringing faculty and other speakers to the weekly sessions. These sessions are the key to the program; attendance is required.

Washington and Lee University
Laurent Boetsch

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Office of the Dean of the College
Lexington, VA 24450
703 463-8746
Robert E. Lee Undergraduate Research Program

Designed to encourage well-qualified and strongly motivated students to become familiar with research tools, techniques, and methodology. Project proposals are received for both academic year and summer work and are chiefly of two types: assisting a professor in research, or carrying out a student-planned project under the supervision of a professor. Students receive no academic credit but do earn stipends which help to offset the cost of their college education.

University of Maine
Harvey Kail
Department of English
Orono, ME 04469
207 581-3829
Peer Writing Tutors

Trains undergraduate students to be Peer Writing Tutors. The emphasis is on constructing knowledge among groups of students and using peers to provide feedback to one another about their writing. The use of student groups disrupts the usual flow of authority from teacher to student and becomes a catalyst for greater student participation and learning.

West Virginia University
Charles Wales
137 Engineering
Morgantown, WV 26506-6101
304 293-3445
Center for Guided Design

Students in a freshman engineering program work in teams of five or six to complete activities which are organized around the solution of a series of open-ended problems. Called the Guided Design process, the activities require students to consider each step of the decision-making process: applying subject matter they have learned, exchanging ideas with others in the group, and reflecting on solutions developed by others. Emphasis is placed on the process of arriving at a solution to a problem, not on the solution alone. See Wales, Section B Bibliography for further references.

Lewis & Clark College
Celeste Brody
Box 93
Portland, OR 97219
503 768-7760
Graduate Core Program

The Core is composed of a seminar series and two courses:

Individua [illegible] ocietal Dimensions of Adulthood, and Organizat [illegible] ultures and Professional Life. It is a multidisci [illegible] ry, liberal arts curriculum which challenges adult students a [illegible] acticing professionals to confront and engage the issues and [illegible] cerns of their program specialties from an individual, [illegible] ofessional, and societal perspective. All Core courses are taught by interdisciplinary faculty teams using teaching methods which emphasize critical thinking, speaking, and writing; small group work; group projects; dialogue journals; and experiential learning activities.

University of Vermont
Toby Fulwiler
315 Old Mill
Burlington, VT 05405-0114
802 656-3314
Faculty Writing Project

Offers a series of faculty writing workshops three times a year. These workshops are open to faculty from all disciplines, last two full days, and are held off campus. In the workshops three basic pedagogical strategies are modeled: writing-to-learn, multiple-draft assignments, and collaborative learning. Collaborative learning is emphasized as a way to create more active learning in all classes, as well as a way for students to get constructive help with writing assignments. Groups are used to share journal writing, solve problems, and critique and respond to drafts.

Western Michigan University
Faith Gabelnick
Kalamazoo, MI 49008-3852
616 387-3230
The Carl and Winifred Lee Honors College

The thrust of the four-year integrated program is to provide 1) a broad base of general, introductory courses which focus on writing, primary sources, group discussion, and critical thinking, and which foster intellectual connections among these courses; 2) a focused group of cross- or interdisciplinary seminars which continue to develop students' problem solving abilities and their competence in considering and using other areas of study to analyze a complex issue; and 3) a capstone thesis or project which focuses and applies these skills and provides a tangible, marketable product for their future professional endeavors.

University of Oklahoma
L. Dee Fink and Larry Michaelsen
206A Adams Hall
University of Oklahoma
Norman, OK 73019-0450
405 325-2651
Individual courses

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Collaborative Learning Networks

Collaboration in Undergraduate Education (CUE)

contact person: Roberta Matthews
LaGuardia Community College
31-10 Thompson Ave.
Long Island City, NY 11101
(718) 482-5405
FAX: (718) 482-5443

CUE is a network that organizes the collaborative learning Action Community of AAHE (American Association of Higher Education) and a part of the National Collegiate Honors Council. Since 1983, it has sponsored various conferences and publications to promote the use of collaborative learning in undergraduate education. A bibliography on collaborative learning is available at the address above.

Cooperative Learning Center

contact persons: David Johnson, Roger Johnson
202 Pattee Hall
150 Pillsbury Dr. SE
Minneapolis, MN 55455
(612) 624-7031

The Center focuses on research on cooperative learning, the structured use of interdependent team members and individual accountability. Much work has been done at the K-12 level, but increasing studies and publications have been done at the college level. The Center is a resource for teacher training, and presents workshops on cooperative learning across the country.

Network for Cooperative Learning in Higher Education

contact person: Jim Cooper
HFA-B-316
1000 E. Victoria St.
Carson, CA 90747
(310) 516-3961

The Network is a part of a FIPSE College Teaching Program at California State University, Dominquez Hills. The FIPSE project includes research on cooperative learning at CSU Dominquez Hills and at area community colleges. Formed to promote the use of cooperative learning in higher education, the Network generates a complimentary newsletter ("Cooperative Learning and College

Teaching")   part of the dissemination efforts of the FIPSE project.   o available are materials such as course syllabi and sample act ies to help implement cooperative learning strategies   the classroom. Call for inclusion in the network's mailing lis .

New England Resource Center for Higher Education

contact person: Zelda Gamson
University of Massachusetts at Boston
Graduate College of Education
Harbor Campus - W/2/143
Boston, MA 02125-3393
(617)287-7740
Fax: (617) 287-7922

The Resource Center serves private and public higher education institutions within New England. Some of the specific interests and concerns of the Center are the development of collaborative relationships within and among colleges and universities in New England, preparation and continuing professional development of administrators and faculty, and incentives for high quality work. The Resource Center has a number of ongoing research projects, sponsors conferences and seminars for a wide range of professionals in higher education, and publishes a newsletter, The Academic Workplace. Contact the Center for inclusion in the mailing list.

Washington Center for Improving the Quality of Undergraduate Education

contact person: Barbara Leigh Smith, Jean MacGregor
The Evergreen State College
Olympia,WA 98505
(206) 866-6000 x6863

"Established in 1985 at Evergreen as an inter-institutional consortium, the Center focuses on low-cost, high-yield approaches to educational reform, emphasizing better utilization and sharing of existing resources through inter-institutional collaboration. The Center is now supported by the Washington State Legislature, and includes 42 participating institutions: all of the state's public four-year institutions and community colleges, and nine independent colleges. It supports and coordinates inter-institutional faculty exchanges, the development of interdisciplinary 'learning community' programs, conferences, seminars and technical assistance on effective approaches to teaching and learning." [From Washington Center News, Fall 1991, (6)1, p. 36].

The Center publishes the Washington Center News, an outstanding newsletter filled with reports of activities from various institutions in the state. Contact the Center for

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inclusion in their mailing list.

Anne S. Good is pursuing a Ph.D. in the Higher Education Program at Syracuse University's School of Education. She has worked in the area of student affairs at a number of colleges and universities and has consulted on student leadership development and student retention. Currently she is carrying out a qualitative study of Freshman Interest Groups (FIG), focusing on the meanings students make of their first year experiences and how they experience FIGs as collaborative learning situations.

Michelle R. Maher is pursuing a Ph.D. in the Division of Cultural Foundations of Education and Curriculum at Syracuse University's School of Education. She is studying alternative pedagogical frameworks that view human agency as the source of educational change, hence her interest in educational theories and strategies such as collaborative learning. She has done research in the areas of feminist theory and multiculturalism as they relate to education and is currently working on a qualitative research project in mathematics education.

Vincent Tinto is professor of education and sociology at Syracuse University. Author of Leaving College: Rethinking the Causes and Cures of Student Attrition, he has carried out research, consulted with private organizations, Federal and State agencies, public and private colleges and universities here and abroad, and written extensively on higher education. His particular interest has been on student retention and the impact of higher on student growth and attainment. Tinto's most recent efforts have been directed toward the study of classrooms as communities and their linkage to both student learning and persistence.

Barbara Leigh Smith is Academic Dean and Director of the Washington Center for Improving the Quality of Undergraduate Education. She has longstanding interests in organizational change and approaches that empower faculty and administrators to work together to improve undergraduate education. Smith has a special interest in interdisciplinary approaches, team teaching, and restructuring through learning communities.

Jean MacGregor is Associate Director of the Washington Center for Improving the Quality of Undergraduate Education. She has been a teacher, researcher, and organizer in the fields of environmental studies and community development and also faculty and curriculum development. She has been a student and practitioner of collaboration learning since the early 1970's.

The National Center on Postsecondary Teaching, Learning, and Assessment (NCTLA) is a five-year, 5.9 million dollar project funded by the U. S. Department of Education's Office of Educational Research and Improvement (OERI). NCTLA's many projects are guided by a single research question: What are the factors that facilitate or inhibit student learning? The

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inquiries about student learning will be conducted through a five-year longitudinal panel study and four other research projects that study curriculum, faculty and instruction, students' out-of-class experiences, and organizational structures and policies. NCTLA has made a serious commitment to dissemination, and it aims to play an important role in the national conversation about undergraduate education. Publications like this one illustrate its commitment to sharing practical information on teaching and learning with the higher education community.

The Washington Center for Improving the Quality of Undergraduate Education is a statewide consortium of 43 colleges and universities in Washington state (including both independent and public institutions and both two and four year colleges). Established in 1985 at The Evergreen State College with initial support from the Exxon and the Ford Foundations, the Washington Center is now funded by the state. The Center has a continuing focus on educational restructuring through learning communities, active and collaborative learning, faculty development, and cultural pluralism. It organizes conferences, coordinates inter-institutional faculty exchanges, manages a seed grant and assessment program, and provides technical assistance and publications. The Center supports a growing grassroots network of faculty and administrators working together to improve undergraduate education.